

UNITED STATES OF AMERICA
DEPARTMENT OF STATE

INTERNATIONAL BOUNDARY AND WATER COMMISSION
UNITED STATES AND MEXICO

WATER BULLETIN NUMBER 73

**Flow of the Rio Grande
and
Related Data**

From Elephant Butte Dam, New Mexico

to the Gulf of Mexico

2003

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FOREWORD

This bulletin presents the seventy-third compilation of the stream discharges and related data concerning the international portion of the Rio Grande, prepared jointly by the United States and Mexican Sections of the International Boundary and Water Commission. The streamflow data and kindred subjects pertain to the Rio Grande and its important tributaries near their confluence with the main stream from Elephant Butte, New Mexico to the Gulf of Mexico. The first publication in the series was Water Bulletin No. 1 for the year 1931. The present volume contains information for the year 2003.

International stream gaging on the Rio Grande was initiated in 1889, when the station at El Paso, Texas was established. Several stations on the Rio Grande and its tributaries downstream from El Paso were established in 1900 and operated until 1914. Between 1914 and 1923, except for a few months in 1919 and 1920, all stream-gaging work on the international reach of the river was suspended. In 1923 the work was resumed and carried on independently by the two countries until 1931, when the present joint program of stream measurements was adopted.

During 2003 the United States Section of the Commission operated the stream-gaging stations on the Rio Grande at El Paso, Below American Dam, Fort Quitman, Candelaria, Above Rio Conchos, Below Rio Conchos, Johnson Ranch, Foster Ranch, Del Rio, El Indio, Laredo, Rio Grande City, San Benito, and Brownsville. The Mexican Section operated the stream-gaging stations on the Rio Grande at Below Amistad Dam, Jimenez, Piedras Negras, and Below Anzalduas Dam. The station at Below Falcon Dam was operated jointly by the two Sections. Each Section operated the gaging stations on tributary streams, floodways, diversions, and return flow channels within its own country.

In 1976 the names of several gaging stations were changed, pursuant to agreement between the two Sections of the Commission. Where it was decided that some confusion might result from this change, a note giving the former name was added to the descriptive heading of the gaging station.

The total drainage area within the outer rim of the Rio Grande Basin is 868,945 square kilometers. However, about half of this area yields no runoff to the river, the estimated productive area of the watershed being 456,701 square kilometers. Major reservoirs in the basin have a total storage capacity of approximately 15,115,600 thousand cubic meters, in addition to the International Amistad and Falcon Reservoirs, which have a combined conservation capacity of 7,160,512 thousand cubic meters. In the Rio Grande basin, a total area of 641,888 hectares is irrigated below Elephant Butte Dam on the Rio Grande and above Girvin in Texas on the Pecos River. The flow of the Rio Grande to the Gulf of Mexico below Brownsville prior to construction of Falcon Dam averaged 3,207,048 thousand cubic meters per year for the period 1934-1952. For the period 1954-2003, this flow has averaged 793,207 thousand cubic meters annually.

The mean sea level datum, referred to as the U. S. C. & G. S. in the description of the stream-gaging stations, is the National Geodetic Vertical Datum of 1929.

Acknowledgments

Other agencies which have contributed to some part of the data published herein include: the Natural Resource Conservation Service of the U. S. Department of Agriculture; the Bureau of Reclamation, the National Park Service, and the Geological Survey of the U. S. Department of the Interior; the National Weather Service of the U. S. Department of Commerce; the Texas Board of Health; the Texas Natural Resource Conservation Commission; the Middle Rio Grande Conservancy District; the Red Bluff Water Power Control District; State of Colorado, Division of Water Resources; the Rio Grande Compact Commission; the Delta Lake Irrigation District; the Del Rio City Water Department; the Eagle Pass City Water Department; the Laredo City Water Department; the Del Mar Conservation District; Central Power and Light Company; the City of El Paso; the Maverick County Control and Improvement District No. 1; the Ministry of Agriculture and Hydraulic Resources of Mexico; the National Water Commission of Mexico; the Meteorological Service of Mexico; the Meteorological Service of the State of Chihuahua, Mexico; Federal Power Commission of Mexico; Potable Water Board of Piedras Negras, Coahuila; Federal Board of Public Improvement Works of Nuevo Laredo, Tamaulipas; and the Water and Drainage Board of Cd. Acuna, Coahuila.

Additional contributions have been made by individuals and corporations; and specific notation is made for such, as well as for those of the above-named agencies, where the data appear. The courtesy and cooperation of those who made these contributions are acknowledged with appreciation.

Period Averages

In Water Bulletins Nos. 1 through 29, normal or average discharge volumes shown for the various gaging stations were based on a period beginning in 1924, or thereafter when records became available.

Beginning with Water Bulletin No. 30, the periods have been revised to include only the years following completion of major projects below which the flow of the Rio Grande or a major tributary was modified, or later when records became available. The revised periods are based on the completion of Caballo Dam in 1938, irrigation projects on the Rio Conchos and its tributaries in 1947, International Falcon Dam in 1953, and International Amistad Dam and Luis L. Leon Dam in 1968.

For purposes of comparison with the average flows in the Rio Grande below Caballo Dam, records of average discharge in the Rio Grande below Elephant Butte Dam have also been revised to include the same period.

The period of record used to determine the average diversions from the Rio Grande to the United States below Falcon Dam published herein was restricted to begin in 1957, the first complete year of record after United States' waters in Falcon Reservoir were placed under the jurisdiction of the 93rd District Court of Texas.

FOREWORD

Units of Measure

This Bulletin is published in System International (SI) units which are based on the metric system. The following conversion constants may be used to convert to the English system of measurement. Data collected by the Mexican Section are computed and published in a Spanish version of the water bulletin in metric units.

METRIC TO ENGLISH CONVERSION CONSTANTS

METRIC UNITS			ENGLISH UNITS

LENGTH			
Millimeters	x	0.03937	= Inches
Meters	x	3.28084	= Feet
Kilometers	x	0.62137	= Miles
AREA			
Square Meters	x	10.76391	= Square Feet
Hectares	x	2.47105	= Acres
Square Kilometers	x	0.38610	= Square Miles
VOLUME			
1,000 Cubic Meters	x	35.31467	= Cubic Feet
Cubic Meters	x	0.81071	= Acre-Feet
WEIGHT			
Kilograms	x	2.20462	= Pounds
Megagrams	x	1.10231	= Tons (2,000 lbs.)
TEMPERATURE			
Degrees Celsius	x	1.8 + 32	= Degrees Fahrenheit

GENERAL HYDROLOGIC CONDITIONS FOR 2003

Along and Adjacent to the International Portion of the Rio Grande

During the year 2003, temperatures were about 0.6 degree Celsius above average on the watershed of the Rio Grande below El Paso, Texas. Evaporation was 103% of average. Precipitation was 83% of average from El Paso to Amistad Dam, 134% of average from Amistad Dam to Falcon Dam, 161% of average from Falcon Dam to Rio Grande City, and 117% of average in the Lower Rio Grande Valley on the United States side.

The yearly volume of flow of the Rio Grande was above average from El Paso to the confluence of the Rio Conchos with the Rio Grande and below average from the Rio Conchos confluence to the Gulf of Mexico. In the reach between El Paso and the confluence of the Rio Conchos, the flow was 35% of average, ranging from 27% of average at Above Rio Conchos to 42% at El Paso; in the reach between the confluence of the Rio Conchos and Amistad Reservoir, where most of the flows normally originate from releases from Luis L. Leon Reservoir (El Granero) on the Rio Conchos, the flow was 36% of average; and in the reach between Amistad Dam and Falcon Reservoir, where flows mostly originate from releases from Amistad Reservoir, the flow was 45% of average. Most of the flows passing the Rio Grande stations below Falcon Dam originated from releases from Falcon Reservoir, which in 2003 amounted to 1,335,908 thousand cubic meters, or 48% of the average for the fifty years of operation, 1954-2003. The estimated volume of flow passing to the Gulf of Mexico was 452,422 thousand cubic meters, which is 57% of the average for this fifty year period.

The total annual flow of all measured tributaries below Fort Quitman was 65% of average. The total flow of these tributaries in the United States was 650,778 thousand cubic meters, or 92% of average. For Mexico, the measured tributary flow, excluding Rio Alamo and Rio San Juan, was 791,188 thousand cubic meters, or 54% of average. The flows of the Rio Alamo and Rio San Juan were 52% and 62% of their respective averages.

Return flow to the Rio Grande at Maverick Power Plant near Eagle Pass was 615,512 thousand cubic meters, or 71% of the thirty-six year average. Return flow to the Rio Grande through various drains in the Maverick County Irrigation District, excluding storm inflow, amounted to 33,321 thousand cubic meters, or 33% of the thirty-six year average.

No significant flooding occurred on the Rio Grande in 2003. The highest peak flows recorded on the Rio Grande were, above Falcon Dam, 1,080 cubic meters per second at Laredo, Texas near Nuevo Laredo, Tamaulipas and below Falcon Dam, 403 cubic meters per second below Anzalduas Dam near Reynosa, Tamaulipas (near Mission, Texas).

For all reservoirs in the Rio Grande basin having a capacity greater than 18,500 thousand cubic meters, except for Amistad and Falcon International Reservoirs, the average amount of water in storage in 2003 was 4,239,300 thousand cubic meters, or 66% of the average 6,418,100 thousand cubic meters. In the United States, stored water in these reservoirs was 39% of average, while in Mexico it was 82% of average.

In International Amistad Reservoir there was a net increase in storage during the year of 601,600 thousand cubic meters. Storage ranged from a high of 1,881,600 thousand cubic meters on December 29-31 to a low of 1,179,700 thousand cubic meters on May 24-26 and averaged 1,464,400 thousand cubic meters during the year, or 47% of the average for the period 1969 through 2003. In International Falcon Reservoir, there was a net increase in storage during the year of 531,800 thousand cubic meters. The storage ranged from a high of 1,418,400 thousand cubic meters on December 28 to a low of 413,500 thousand cubic meters on May 26 and averaged 813,500 thousand cubic meters during the year, or 39% of the average for the period 1954 through 2003.

Diversions from the Rio Grande in the United States were 60% of average. DivERSIONS into the American Canal were 48% of average, into the Maverick Canal, 63% of average and in the United States below Falcon Dam 60% of the average for the period 1958-2003. In Mexico, diversions were 45% of average. Diversions into the Acequia Madre were 53% of average, while diversions through the Anzalduas Canal in Mexico were 45% of the 1952-2003 average.

In 2003, the total reported irrigated area from the Rio Grande and its tributaries below Caballo Dam showed a 35% increase from the previous year. On the United States side, there was a increase of about 9% above Falcon Dam and a increase of about 70% below Falcon Dam, for an overall average increase of 32%. On the Mexican side, there was a increase of about 19% reported above Falcon Dam and an increase of about 229% below Falcon Dam, for an overall increase of 58%.

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

08-3610.00 RIO GRANDE BELOW ELEPHANT BUTTE DAM, NEW MEXICO

DESCRIPTION: Concrete wall control, bubbler gage, water-stage recorder, and data collection platform located on the left bank 30 meters upstream from the cableway at latitude 33° 08' 55", longitude 107° 12' 20", and river kilometer 2,236; 1.6 river kilometers downstream from Elephant Butte Dam, 2.4 river kilometers upstream from Cuchillo Negro River, and 217 river kilometers upstream from the American Dam at El Paso, Texas. The zero of the gage is 1,292.68 meters above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 23 current-meter measurements during the year and a continuous record of gage heights. Records were furnished by the United States Geological Survey. Records available: 1915 through 2003.

REMARKS: Reservoirs, diversions, and drainage returns modify the river flow at this station. Beginning December 1940, hydroelectric power generation facilities for 27,000 kva were placed in operation at Elephant Butte Dam. The data collection platform is operated by U. S. Geological Survey and relays gage height data by radio via satellite.

EXTREME FLOWS FROM RECORDS:

				Average Flow in Cubic Meters per Second											
Daily:	Max.	233	May 22, 1942				Min.	0				Occasionally			
Monthly:	Max.	215	May 1942				Min.	0.03				Nov. 1971			
Yearly:	Max.	71.1	1942				Min.	7.16				1964			

MEAN DAILY DISCHARGE IN CUBIC METERS PER SECOND 2003 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.07	0.20	16.9	* 19.4	18.7	38.8	45.9	30.9	19.3	0.40	0.28	* 0.22
2	.07	.20	16.9	19.3	* 18.5	* 39.1	* 37.4	30.9	* 22.0	.42	.28	.22
3	.20	.18	16.9	19.4	18.6	39.4	32.9	30.9	22.6	.42	* .28	.22
4	.24	.16	* 17.0	19.7	18.7	39.4	33.1	* 30.9	19.2	.42	.27	.22
5	.24	.17	17.0	19.7	11.8	39.6	33.4	31.4	19.3	.42	.27	.22
6	.23	.20	17.1	19.7	8.04	39.6	33.7	32.0	19.3	.42	.27	.22
7	* .25	.19	17.0	19.9	7.93	39.9	34.0	32.6	19.3	.42	.26	.22
8	.24	.20	17.0	20.1	7.73	40.2	34.3	33.1	16.0	.40	.26	.22
9	.28	.20	17.0	20.1	7.65	40.2	34.6	33.7	11.4	.40	.27	.19
10	.27	.18	17.0	20.2	7.50	40.5	35.1	34.0	10.9	.37	.27	.14
11	.27	.18	17.0	20.4	7.42	38.8	35.4	34.6	12.5	.37	.27	.17
12	.26	.18	13.7	20.5	7.31	40.2	35.7	35.1	10.1	.37	.26	.22
13	.25	.19	11.8	20.6	7.14	40.5	35.7	35.4	9.88	.37	* .25	.24
14	.14	.21	11.8	20.6	6.91	40.8	* 22.7	36.0	9.77	.37	.25	.24
15	.12	.22	11.8	20.8	6.80	41.1	15.5	36.5	* 3.88	.37	.24	* .23
16	.20	.22	11.9	* 20.8	* 6.66	* 41.6	15.6	37.1	.37	.37	.25	.23
17	.08	.22	* 11.9	20.8	6.57	42.2	15.8	37.4	.37	* .40	.25	.24
18	.08	10.1	12.0	20.7	6.54	42.2	16.2	37.9	.40	.37	.24	.24
19	.08	* 16.5	12.0	20.5	6.51	42.8	16.5	38.8	.40	.37	.24	.25
20	.08	16.9	12.0	20.4	25.9	43.0	16.7	* 39.6	.40	.37	.23	.24
21	.14	16.7	16.3	20.2	36.5	43.6	16.9	27.0	.40	.37	.23	.23
22	.23	16.8	18.8	20.2	36.5	43.9	17.0	19.7	.40	.37	.24	.23
23	.23	16.8	18.9	20.1	36.5	44.2	17.1	19.8	.37	.37	.23	.23
24	.22	16.8	18.9	20.0	36.5	44.5	18.3	19.8	.37	.34	.23	.23
25	.22	16.9	19.0	19.7	36.5	45.0	18.9	18.3	.40	.34	.22	.23
26	.22	16.9	19.1	19.5	36.8	44.7	19.2	19.7	.40	.34	.22	.24
27	.22	16.9	19.1	19.4	37.1	45.3	19.4	19.8	.40	.34	.22	.24
28	.21	16.9	19.1	19.2	37.4	41.3	24.7	20.4	.40	.31	.22	.24
29	.21		19.3	19.1	37.9	45.3	30.6	19.5	.42	.31	.23	.23
30	* .18		19.3	18.9	38.2	45.6	30.6	19.4	* .40	.31	.22	.23
31	.20		19.3		38.5		30.6	19.3	.28			.22
Sum	5.93	181.50	502.8	599.9	621.31	1,253.3	823.5	911.5	231.33	11.50	7.45	6.94

Current Year 2003 | Period 1938-2003

Month	Extreme Gage Meters		Extreme-Cubic Meters per Second		Average	Total	Volume-Thousand Cubic Meters		
	High	Low	@ High Day	@ Low Day			Average	Maximum	Minimum
Jan.			9	0.28	! 1	0.07	0.19	512	29,121
Feb.			! 20	16.9	4	.16	6.48	15,682	54,460
Mar.			! 29	19.3	! 13	11.8	16.2	43,442	92,327
April			! 15	20.8	30	18.9	20.0	51,831	105,628
May			31	38.5	19	6.51	20.0	53,681	116,128
June			30	45.6	! 1	38.8	41.8	108,285	447,576
July			1	45.9	15	15.5	26.6	71,150	129,271
Aug.			20	39.6	25	18.3	29.4	78,754	94,712
Sept.			3	22.6	! 16	.37	7.71	19,987	45,351
Oct.			! 2	.42	31	.28	.37	994	20,329
Nov.			! 1	.28	! 25	.22	.25	644	15,635
Dec.			19	.25	10	.14	.22	600	21,807
Yearly				45.9		0.07	14.1	445,562	848,683
								12,243,367	226,236

* Discharge measurement(s) made on this day @ Mean daily ! And other days

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

08-3625.00 RIO GRANDE BELOW CABALLO DAM, NEW MEXICO

DESCRIPTION: Cableway, gravity well, water-stage recorder, and data collection platform located on the left bank at latitude 32° 53' 05", longitude 107° 17' 30", and river kilometer 2,190; 1.3 river kilometers downstream from Caballo Dam, about 5.0 kilometers northeast of Arrey, New Mexico, 8.0 kilometers south of Caballo, New Mexico, and 172 river kilometers upstream from the American Dam at El Paso, Texas. The zero of the gage is 1,262.15 meters above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 40 current-meter measurements during the year and a continuous record of gage heights. Records were furnished by the El Paso office of the United States Bureau of Reclamation. Records available: 1938 through 2003.

REMARKS: Reservoirs, diversions, and drainage returns modify the river flow at this station. In addition to the outflow from Caballo Dam listed below, 1,602 TCM of water were diverted in 2003 into Bonita Lateral, a small irrigation canal just below Caballo Dam. Prior to 1938, discharge records were kept at Percha Dam, a low diversion dam about 2.4 kilometers downstream from this station. Small accretions to the river take place between the station and Percha Dam. The data collection platform is operated by U. S. Bureau of Reclamation and relays gage heights and flow data by radio via satellite.

EXTREME FLOWS FROM RECORDS:

			Average Flow in Cubic Meters per Second									
Daily:	Max.	217	May 20, 1942			Min.	0	1954, 1955 and 1972				
Monthly:	Max.	190	May 1942			Min.	0	Nov. 1955				
Yearly:	Max.	70.2	1942			Min.	8.04	1964				

MEAN DAILY DISCHARGE IN CUBIC METERS PER SECOND 2003 --- ANNUAL AND PERIOD SUMMARY												
Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.08	0.12	0.07	* 30.4	0.34	33.2	* 45.3	* 50.6	35.6	0.04	0.07	0.03
2	.08	.12	.07	34.4	.34	34.1	38.2	49.3	* 31.9	.04	.07	.03
3	.08	.12	.07	36.8	.34	* 36.8	33.2	49.0	27.4	.04	.07	.03
4	.12	.12	.07	* 33.7	.34	43.2	32.1	49.0	* 15.0	.05	.07	.03
5	.16	.12	.07	28.2	.34	* 47.4	33.1	* 49.8	* 16.1	.06	.06	.03
6	.16	.12	.07	27.9	.34	* 44.1	32.8	51.4	17.6	.06	.05	.03
7	.16	.12	.07	27.8	.34	43.8	25.3	49.8	17.6	.06	.05	.03
8	.16	.12	.07	24.3	.34	43.8	* 18.5	46.2	17.6	.06	.05	.03
9	.16	.12	.07	* 21.9	.34	42.6	16.6	* 44.9	* 17.6	.06	.04	.03
10	.16	.12	.07	22.7	.34	39.4	* 12.1	44.5	17.6	.04	.03	.03
11	.16	.12	.07	24.0	.34	* 33.5	12.4	44.4	14.4	.07	.03	.03
12	.16	.12	.07	* 25.5	.34	30.2	13.7	* 42.3	14.9	.07	.03	.03
13	.16	.12	.07	25.1	.34	34.2	13.7	39.3	14.3	.07	.03	.03
14	.16	.11	.07	24.9	.34	* 38.2	14.0	41.1	14.0	.07	.03	.03
15	.16	.10	.07	22.5	4.05	38.3	14.8	* 47.5	13.3	.07	.03	.03
16	.16	.10	.07	19.7	20.0	41.7	* 16.9	50.7	15.2	.07	.03	.03
17	.16	.10	2.75	16.7	29.0	43.0	17.1	50.4	* 18.8	.07	.03	.04
18	.16	.10	* 4.64	12.0	29.0	37.0	18.5	47.4	18.6	.07	.03	.05
19	.16	.10	4.64	11.2	* 34.4	34.1	20.4	* 46.1	12.6	.07	.03	.05
20	.16	.08	4.64	11.4	* 38.5	34.2	20.4	48.5	.21	.07	.03	.05
21	.15	.07	* 20.9	7.22	37.7	34.4	20.5	45.5	.04	.07	.03	.05
22	.14	.07	28.9	.34	33.2	34.5	* 20.4	* 43.7	.04	.07	.03	.05
23	.14	.07	29.1	.34	* 31.1	34.6	20.4	45.7	.04	.07	.03	.05
24	.14	.07	28.8	.34	31.2	* 37.4	20.4	45.0	.04	.07	.03	.06
25	.14	.07	* 29.6	.34	31.2	37.1	* 31.2	47.1	.04	.07	.03	.07
26	.14	.07	35.2	.34	31.1	42.5	38.0	48.8	.04	.07	.03	.07
27	.13	.07	36.0	.34	* 35.1	52.0	37.9	50.7	.04	.07	.03	.07
28	.12	.07	* 27.6	.34	39.0	53.4	42.8	50.8	.04	.07	.03	.07
29	.12		26.6	.34	38.3	52.5	* 48.1	46.6	.04	.07	.03	.07
30	.12		26.6	.34	* 37.1	* 49.0	50.4	* 41.0	.04	.07	.03	.07
31	.12		27.8		34.7		52.3	38.3	.07			.07
Sum	4.38	2.81	491.38	539.41	1,200.2	831.5	1,445.4	350.71	1.98	1.16	1.37	
Current Year 2003												
Period 1938-2003												
Extreme Gage Meters												
Extreme-Cubic Meters per Second												
Month	High	Low	@ High Day	@ Low Day	Average	Total	Volume-Thousand Cubic Meters					
							Average	Maximum	Minimum			
Jan.			! 5	0.16	! 1	0.08	0.14	378	5,355	146,403		23.7
Feb.			! 1	.12	! 21	.07	.10	243	17,944	138,207		14.4
Mar.			27	36.0	! 1	.07	10.8	28,934	112,435	200,839		28,934
April			3	36.8	! 22	.34	16.4	42,455	100,319	261,905		31,417
May			28	39.0	! 1	.34	17.4	46,605	102,166	508,691		92.8
June			28	53.4	12	30.2	40.0	103,697	137,150	436,371		31,193
July			31	52.3	10	12.1	26.8	71,842	144,140	309,079		34,748
Aug.			6	51.4	31	38.3	46.6	124,883	128,552	220,412		25,320
Sept.			1	35.6	! 21	.04	11.7	30,301	67,387	223,812		8,335
Oct.			! 11	.07	! 1	.04	.06	171	13,349	151,369		19.1
Nov.			! 1	.07	! 10	.03	.04	100	3,407	101,642		8.8
Dec.			! 25	.07	! 1	.03	.04	118	4,641	180,557		7.5
Yearly				53.4		0.03	14.3	449,727	836,845	2,215,231		254,198

* Discharge measurement(s) made on this day @ Mean daily ! And other days

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

08-3640.00 RIO GRANDE AT EL PASO, TEXAS

DESCRIPTION: Cableway, bubbler gage, water-stage recorder and data collection platform with GOES high data rate telemetry located on the left bank 60 meters upstream from the Courchesne Bridge at latitude 31° 48' 10", longitude 106° 32' 25", and river kilometer 2,021; 8.9 river kilometers upstream from the Paso del Norte Bridge between El Paso, Texas and Cd. Juarez, Chihuahua and 2.7 kilometers upstream from the American Dam at El Paso, Texas. The zero of the gage is 1,134.56 meters above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 29 current-meter measurements during the year and a continuous record of gage heights. Computations by shifting control methods. Records available: 1889 through 2003.

REMARKS: Reservoirs, diversions, and drainage returns modify the river flow at this station.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 680 CMS on June 12, 1905. Min. occasionally no flow. Since Elephant Butte Dam was closed in 1915, the largest peak flow to pass this station was 382 CMS on September 3, 1925.

			Average Flow in Cubic Meters per Second			
Daily:	Max.	671	June 12, 1905	Min.	0	Occasionally
Monthly:	Max.	405	June 1905	Min.	0	Occasionally
Yearly:	Max.	78.7	1905	Min.	1.99	1902

MEAN DAILY DISCHARGE IN CUBIC METERS PER SECOND 2003 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	2.87	2.36	2.03	9.99	* 1.08	12.2	19.8	17.8	18.2	* 0.70	0.36	* 0.29
2	* 2.85	2.02	2.00	9.06	.93	12.9	18.1	20.0	14.6	.43	.37	.27
3	2.83	1.82	* 1.93	8.64	.86	12.6	14.8	21.0	16.6	.36	* .29	.32
4	2.79	1.79	1.89	10.3	.84	12.5	15.5	24.9	14.7	.36	.30	.73
5	2.81	1.81	1.88	9.96	.82	* 14.2	10.8	25.1	* 15.4	.31	.40	.61
6	2.79	1.83	1.88	10.8	.77	15.8	9.83	* 24.4	19.6	.24	.28	.51
7	2.70	1.83	1.80	9.39	* .72	15.6	12.5	* 24.7	16.3	.48	.31	.50
8	2.65	1.87	1.79	9.38	.67	16.1	* 13.6	22.7	16.0	* .41	.37	* .39
9	2.65	1.93	1.79	8.31	.58	20.8	17.0	19.9	16.8	* .61	.35	.20
10	2.54	1.93	1.80	* 8.04	.48	20.9	18.0	19.1	17.0	.84	.37	.31
11	2.57	* 1.90	1.89	5.27	.49	20.6	16.0	21.1	14.3	.74	.34	.45
12	2.62	1.88	1.93	5.14	.51	19.2	12.8	24.7	12.9	.73	.32	.31
13	2.59	1.88	1.78	5.14	.55	15.9	13.4	23.2	12.2	.83	.52	.23
14	2.59	1.84	1.82	5.18	.57	12.6	12.6	20.3	10.3	.42	.72	.27
15	2.59	1.83	1.83	4.81	.59	10.7	11.4	19.5	10.4	.47	.52	.27
16	2.62	1.82	1.84	4.27	* .57	16.5	10.1	18.3	10.6	.45	.45	.21
17	2.62	1.86	1.85	4.61	.52	17.1	10.8	21.6	10.3	* .37	.42	* .29
18	2.63	1.86	1.90	4.21	.38	17.6	11.7	27.1	9.76	.37	.50	.21
19	2.63	1.87	1.86	3.79	3.15	17.8	12.1	26.7	11.5	.41	.69	.18
20	2.67	2.25	1.86	4.01	4.53	14.4	14.7	24.7	12.0	.37	* .36	.29
21	2.66	3.67	1.93	4.10	6.10	10.1	13.3	21.7	11.4	.34	.26	.30
22	2.63	3.26	2.49	* 3.48	8.58	9.89	* 13.2	20.8	* 8.57	.34	.24	.24
23	2.62	2.88	3.11	4.01	9.10	11.2	13.1	19.7	5.61	* .31	.17	.27
24	2.61	* 2.58	7.97	4.28	8.52	12.7	12.2	18.6	4.86	.31	.24	.17
25	2.61	2.47	12.4	2.72	8.43	* 12.3	11.2	21.7	4.32	.34	* .32	.19
26	2.65	2.40	* 8.94	1.99	9.92	12.8	11.2	22.6	2.97	.31	.26	.13
27	2.63	2.30	10.3	1.74	10.6	13.2	11.0	22.0	2.27	.30	.27	.09
28	2.63	2.13	13.1	1.53	9.81	13.0	11.3	21.3	1.91	.31	.26	.04
29	2.61		16.7	1.27	9.17	15.0	11.9	20.5	1.33	.31	.31	.03
30	2.61		11.1	1.12	* 13.3	18.1	13.8	19.4	.98	.40	.32	.05
31	2.60		10.1		13.2		17.9	18.0		.38		.05
Sum	82.47	59.87	135.49	166.54	126.34	444.29	415.63	673.1	323.68	13.55	10.89	8.40

Current Year 2003

Period 1938-2003

Month	Extreme Gage Meters		Extreme-Cubic Meters per Second		Average		Volume-Thousand Cubic Meters				
	High	Low	Day	Day	Low	Total	Average	Maximum	Minimum		
Jan.	0.985	0.960	1	2.90	10	2.52	2.66	7,125	11,029	150,048	271
Feb.	1.120	.895	21	6.01	4	1.75	2.14	5,173	13,306	122,304	167
Mar.	1.375	.865	29	17.9	8	1.73	4.37	11,706	49,262	140,433	2,204
April	1.115	.895	6	11.3	30	1.07	5.55	14,389	51,998	171,563	8,414
May	1.140	.805	31	14.8	12	.18	4.08	10,916	56,360	439,894	644
June	1.465	1.170	9	21.6	22	9.27	14.8	38,387	69,832	375,353	7,421
July	1.505	1.195	9	22.4	6	8.87	13.4	35,910	78,851	244,070	11,904
Aug.	1.630	1.345	4	29.5	16	14.9	21.7	58,156	72,602	194,405	6,007
Sept.	1.545	.830	5	24.9	30	.76	10.8	27,966	49,487	211,481	2,995
Oct.	.935	.775	7	1.59	14	.02	.44	1,171	23,296	163,710	186
Nov.	.895	.780	5	1.87	25	.09	.36	941	12,622	124,457	282
Dec.	.940	.825	4	1.00	28	0	.27	726	12,416	197,341	254
Yearly	1.630	0.775		29.5		0	6.74	212,566	501,061	1,923,317	70,867

* Discharge measurement(s) made on this day ! And other days

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

08-3645.00 DIVERSIONS FROM THE RIO GRANDE
AMERICAN CANAL AT EL PASO, TEXAS

DESCRIPTION: Concrete control consisting of two triangular-shaped wingwalls extending toward the center of the canal about one-fourth of the canal width and downstream at a 30° angle with the canal side walls, bubbler gage, water-stage recorder, and data collection platform with GOES high data rate telemetry located on the right bank of the concrete-lined canal at El Paso, Texas, latitude 31° 46' 40", longitude 106° 31' 35", and about 0.7 kilometer downstream from the headgates of the American Dam which are located at river kilometer 2,018. The zero of the gage is 1,131.45 meters above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 19 current-meter measurements during the year, a stable rating curve at medium and high flows, and a continuous record of gage heights. Records available: June 2, 1938 through 2003.

REMARKS: This canal diverts water from the Rio Grande at the American Dam at El Paso, Texas, 3.4 river kilometers upstream from the International Dam at Cd. Juarez, Chihuahua. Water from this canal discharges into the American Canal Extension and into the Franklin Canal. The transmitter relays gage height data via GOES satellite.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 52.1 CMS on March 27, 1944. Min. frequently no flow.

		Average Flow in Cubic Meters per Second											
Daily:	Max.	42.8	Aug. 13, 1945		Min.	0		Frequently					
Monthly:	Max.	34.3	Aug. 1943		Min.	0		Frequently since 1952					
Yearly:	Max.	21.2	1943		Min.	0.24		Frequently since 1990					

MEAN DAILY DISCHARGE IN CUBIC METERS PER SECOND 2003 --- ANNUAL AND PERIOD SUMMARY													
Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	
1	2.23	2.16	2.05	5.42	1.27	10.6	12.9	15.8	15.4	* 0.51	0.53	0.58	
2	2.18	2.17	1.99	5.07	1.16	9.66	12.2	16.9	15.0	.52	.51	* .60	
3	2.15	2.08	* 2.08	5.16	1.12	8.27	10.6	17.4	14.6	* .47	.53	.62	
4	2.23	*	2.17	2.04	6.58	1.09	8.04	11.3	19.2	.50	* .51	.64	
5	2.38	2.05	1.96	6.55	* 1.05	* 9.13	8.10	* 18.8	16.3	.49	.56	.54	
6	2.21	2.05	1.89	7.47	1.03	10.3	7.12	18.1	15.8	.37	.54	.59	
7	2.09	2.00	1.84	6.58	1.02	10.3	9.25	18.3	13.2	.36	.51	.66	
8	2.10	2.12	1.81	6.70	.95	10.3	10.6	17.6	* 14.2	* .41	.53	.61	
9	*	2.17	2.17	1.78	4.84	.89	13.5	12.8	16.9	14.0	.49	.57	
10	2.14	2.20	1.77	* 4.24	.83	13.7	* 14.0	15.8	14.2	.43	.56	.56	
11	2.17	2.19	1.75	3.30	.81	13.4	12.3	16.3	13.7	.37	.52	.59	
12	2.17	2.06	1.70	3.83	.78	12.7	10.3	18.1	12.5	.37	.54	.58	
13	2.18	2.02	1.65	3.69	.76	10.3	10.6	18.2	12.1	.38	.63	.58	
14	2.19	2.16	1.64	3.61	.76	7.56	9.90	16.7	10.3	.39	.72	.56	
15	2.29	2.09	1.63	3.94	.78	5.67	9.27	15.2	10.2	* .39	.68	.56	
16	2.28	1.99	1.55	3.52	.75	10.1	8.38	14.9	10.2	.48	.64	.52	
17	2.33	1.92	1.51	4.64	.75	10.8	9.01	17.1	9.65	.47	.65	.58	
18	2.29	1.89	1.47	4.05	.69	11.2	9.41	21.3	8.88	.46	.63	.57	
19	2.29	1.84	1.39	3.58	2.90	11.4	9.40	20.7	9.63	.47	.61	* .56	
20	2.32	3.23	1.38	3.52	4.34	9.04	11.6	19.2	10.8	.52	.61	.58	
21	2.33	4.92	1.48	3.53	5.86	5.72	10.5	19.1	9.87	.56	.60	.57	
22	2.36	3.58	.84	2.67	7.96	5.54	10.4	19.4	7.49	.50	.59	.56	
23	2.21	2.93	.59	3.26	7.95	6.51	10.5	18.6	4.53	.53	.57	.59	
24	2.19	2.57	5.11	3.48	8.23	7.22	9.84	17.6	3.53	* .53	* .55	.59	
25	2.19	2.40	8.56	2.91	8.32	7.21	9.16	19.8	2.47	.52	.61	.54	
26	2.22	2.34	5.46	2.13	9.11	7.78	9.20	20.3	1.84	.56	.57	.56	
27	2.14	2.23	6.61	1.71	9.36	8.04	9.13	20.3	1.64	.58	.59	.56	
28	2.18	2.11	8.79	1.01	8.83	8.00	9.04	19.9	1.46	.57	.56	.53	
29	2.17		11.6	.97	8.76	9.55	9.67	19.1	.78	.54	.58	.55	
30	2.15		7.51	1.30	* 11.8	11.9	11.3	17.2	.25	.56	.62	.56	
31	2.09		5.92		12.3		15.2	16.0		.51		.58	
Sum	68.62	65.64	97.35	119.26	122.21	283.44	322.98	559.8	289.32	14.81	17.42	17.80	
	Current Year 2003												
	Period 1939-2003												
Month	Extreme Gage Meters		Extreme-Cubic Meters per Second		Volume-Thousand Cubic Meters								
	High	Low	Day	High	Day	Average	Total	Average	Maximum	Minimum			
Jan.	1.440	1.205	9	2.77	9	1.75	2.21	5,929	5,355	51,241	0		
Feb.	1.910	1.155	20	8.42	19	1.69	2.34	5,671	9,367	62,253	0		
Mar.	2.215	.745	29	12.6	122	.10	3.14	8,411	40,812	69,130	0		
April	1.950	.700	9	9.33	29	0	3.98	10,304	36,259	87,408	0		
May	2.380	.850	30	15.8	19	.54	3.94	10,559	35,595	85,163	0		
June	2.340	1.450	10	15.2	22	4.95	9.45	24,489	47,018	80,984	0		
July	2.300	1.520	9	16.7	6	6.35	10.4	27,905	54,690	87,171	0		
Aug.	2.740	2.020	27	24.6	16	12.3	18.1	48,367	52,956	92,064	0		
Sept.	2.620	.735	5	21.1	30	.08	9.64	24,997	37,210	77,877	0		
Oct.	.950	.695	26	.78	1	0	.48	1,280	18,280	59,131	0		
Nov.	.990	.840	13	.91	23	.32	.58	1,505	8,630	37,208	0		
Dec.	.970	.820	6	.88	2	.30	.57	1,538	7,919	55,112	0		
Yearly	2.740	0.695		24.6		0	5.42	170,955	354,091	668,068	7,603		

* Discharge measurement(s) made on this day ! And other days

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

08-3650.00 RIO GRANDE BELOW AMERICAN DAM AT EL PASO, TEXAS
AND CD. JUAREZ, CHIHUAHUA

DESCRIPTION: Cableway, bubbler gage, water-stage recorder and data collection platform with GOES high data rate telemetry located on the left bank of the river at latitude 31°46'35", longitude 106°31'20", and river kilometer 2,017; 2.4 river kilometers upstream from the International Dam, 5.0 river kilometers upstream from the Paso del Norte Bridge between El Paso, Texas and Cd. Juarez, Chihuahua, and 1.0 river kilometer downstream from the American Dam. The zero of the gage is 1,131.51 meters above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 46 current-meter measurements during the year, and a continuous record of gage heights. Computations by shifting control methods. Records available: June 1938 through 2003.

REMARKS: Reservoirs, diversions, and drainage returns modify the river flow at this station. The operation of the American Dam began June 2, 1938. Part of the flow above the dam is diverted into the American Canal, and the remainder, including excess flood flows, passes below the dam.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 320 CMS on September 14, 1958 with a gage height of 4.42 meters. Min. occasionally no flow.

		Average Flow in Cubic Meters per Second													
Daily:	Max.	171		May 20, 1942										Min. 0	Occasionally
Monthly:	Max.	138		May 1942										Min. 0	Occasionally
Yearly:	Max.	42.8		1942										Min. 0.39	1956

MEAN DAILY DISCHARGE IN CUBIC METERS PER SECOND 2003 --- ANNUAL AND PERIOD SUMMARY													
Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	
1	0.10	0.15	0.13	* 3.41	* 0.14	0.68	4.17	* 4.09	0.72	0.44	0.14	* 0.07	
2	.10	.15	.13	3.37	.14	* 2.83	4.06	4.41	* .43	.38	.14	.07	
3	.10	* .13	* .13	3.31	.13	* 4.02	* 3.95	4.35	.42	* .31	.15	.07	
4	.10	.13	.11	* 3.33	.13	4.07	4.11	* 4.55	.41	.32	* .15	.08	
5	.10	.14	.10	3.34	.13	4.02	4.08	4.45	.44	.36	.13	.08	
6	* .10	.14	.10	3.45	.12	* 4.05	4.23	4.39	.47	.34	.11	.08	
7	* .10	.16	.10	3.34	.12	4.20	* 4.29	4.09	.41	.34	.10	.08	
8	.10	.15	.10	* 3.27	.12	4.36	3.99	* 4.19	.40	* .27	.09	.08	
9	.11	.13	.10	3.29	.12	* 4.35	4.05	4.21	.38	.22	.09	.07	
10	.13	.14	.09	3.40	.12	4.33	4.04	4.33	.37	.30	.08	.07	
11	.14	.16	.09	1.39	.13	4.40	* 4.18	* 4.32	.37	.33	.08	.07	
12	.13	.15	.09	.43	.17	4.37	4.05	4.10	* .39	.33	.07	.07	
13	.13	.14	.09	.43	* .15	* 4.25	4.09	4.11	.39	.34	.07	.07	
14	.14	.13	.09	.43	.15	4.42	* 4.02	3.94	.38	.29	.06	.07	
15	.12	.11	.09	.39	.12	4.48	4.04	* 4.08	.37	.27	.05	.07	
16	.13	.12	.09	.37	.11	* 4.53	3.99	4.35	.39	.30	.05	.07	
17	.11	.11	.08	.37	.13	4.28	3.97	3.91	.38	* .33	.05	* .07	
18	.11	.11	.08	.30	.13	4.17	* 3.93	* 4.03	.43	.32	.04	.06	
19	.10	.11	.08	.27	.17	4.00	3.88	4.44	.50	.31	.04	.06	
20	.11	.16	.08	.28	.25	* 4.03	3.85	4.50	.54	.21	.03	.06	
21	.10	.14	.08	.24	.17	4.13	* 3.80	2.18	.51	.13	* .03	.06	
22	.10	.13	1.84	* .18	.20	4.45	4.01	.84	.44	.15	.03	.05	
23	.12	.11	3.24	.15	.16	* 4.45	* 3.95	.85	.42	* .19	.04	.05	
24	.12	.12	* 3.01	.15	.15	4.37	3.91	.70	.40	.21	.04	.04	
25	.11	.13	3.37	.15	.14	4.31	* 3.91	.43	* .38	.23	.04	.04	
26	.12	.11	3.21	.14	.19	4.35	3.97	.55	.37	.19	.04	.04	
27	.13	.11	3.24	.15	.31	* 4.32	4.04	.62	.36	.17	.05	.03	
28	.14	.12	* 3.39	.14	.52	4.21	* 4.05	.62	.40	.15	.05	.03	
29	.14		3.30	.14	.66	4.18	4.08	.49	.39	.14	.06	.03	
30	.15		3.30	.14	.78	4.17	4.04	.43	.40	.15	.06	.02	
31	.16		3.41		.85		3.97	.51		.15		.02	
Sum			3.69		39.75		122.78		93.06		8.17		1.83
Current Year 2003 Period 1939-2003													
Extreme Gage Meters				Extreme-Cubic Meters per Second				Volume-Thousand Cubic Meters					
Month	High	Low	Day	High	Low	Average	Total	Average	Maximum	Minimum			
Jan.	1.365	1.350	31	0.17	! 2	0.10	0.12	315	5,764	98,781	0		
Feb.	1.385	1.345	20	.30	! 24	.10	.13	319	3,875	60,041	0		
Mar.	1.705	1.350	23	3.80	22	.07	1.08	2,881	7,779	79,572	99.8		
April	1.745	1.395	7	4.74	! 28	.13	1.33	3,434	14,957	91,915	2,752		
May	1.500	1.380	31	.94	! 15	.10	.22	597	19,944	369,945	31.1		
June	1.750	1.475	16	4.90	2	.62	4.09	10,608	21,847	308,855	0		
July	1.815	1.685	31	5.65	20	3.61	4.02	10,774	24,142	191,605	1,193		
Aug.	1.795	1.405	21	5.74	28	.18	3.00	8,040	18,908	140,115	46.3		
Sept.	1.470	1.420	1	.89	27	.30	.42	1,094	11,398	152,960	66.4		
Oct.	1.435	1.370	! 1	.47	9	.09	.26	706	4,785	104,679	22.2		
Nov.	1.390	1.345	4	.17	! 21	.03	.07	187	3,987	87,256	0		
Dec.	1.415	1.320	5	.22	31	.02	.06	158	4,495	142,194	0		
Yearly	1.815	1.320		5.74		0.02	1.24	39,113	141,881	1,349,111	12,337		

* Discharge measurement(s) made on this day ! And other days

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

08-3655.00 DIVERSIONS FROM THE RIO GRANDE
ACEQUIA MADRE AT CD. JUAREZ, CHIHUAHUA

DESCRIPTION: Bridge for making discharge measurements, gravity well, and water-stage recorder located on the right bank of the canal at Cd. Juarez, Chihuahua, latitude 31° 45' 36", longitude 106° 30' 32", about 80 meters downstream from the canal intake at the International Dam at Cd. Juarez, Chihuahua, which is located at river kilometer 2,015 and 3.4 river kilometers downstream from the American Dam at El Paso, Texas.

RECORDS: Flow records provided by Mexican Section. Records available: 1938 through 2003. These records, showing the water diverted by Mexico, do not necessarily reflect the quantities of water made available to Mexico in the bed of the river by the United States under the terms of the Convention of 1906. Such quantities of water are included in the record of "Rio Grande below American Dam at El Paso, Texas" on the preceding page of this bulletin.

REMARKS: Based on 43 current-meter measurements and a continuous record of stage.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 13.6 CMS on July 21, 1944 with a gage height of 1.83 meters. Min. no flow during several months throughout the year.

			Average Flow in Cubic Meters per Second											
Daily:	Max.	9.61	May 10, 1942			Min. 0			Several months each year					
Monthly:	Max.	7.42	May 1942			Min. 0			Several months each year					
Yearly:	Max.	3.28	1942			Min. 0.26			1964					

MEAN DAILY DISCHARGE IN CUBIC METERS PER SECOND 2003 --- ANNUAL AND PERIOD SUMMARY												
Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0	0	0	3.35	0	0	4.14	* 3.99	0	0	0	0
2	0	0	0	* 3.23	0	* 2.43	* 4.21	4.28	0	0	0	0
3	0	0	0	3.22	0	* 3.51	* 4.04	4.19	0	0	0	0
4	0	0	0	* 3.23	0	* 3.59	* 4.15	* 4.30	0	0	0	0
5	0	0	0	3.15	0	3.63	3.86	4.24	0	0	0	0
6	0	0	0	3.20	0	* 3.71	* 3.95	* 4.16	0	0	0	0
7	0	0	0	* 3.22	0	3.87	* 4.24	4.16	0	0	0	0
8	0	0	0	2.92	0	3.91	4.02	* 4.12	0	0	0	0
9	0	0	0	* 2.91	0	* 3.96	* 4.00	4.10	0	0	0	0
10	0	0	0	* 2.95	0	3.93	3.94	4.12	0	0	0	0
11	0	0	0	2.91	0	* 4.07	* 4.09	* 4.18	0	0	0	0
12	0	0	0	0	0	4.09	3.93	3.99	0	0	0	0
13	0	0	0	0	0	* 4.00	3.97	* 3.93	0	0	0	0
14	0	0	0	0	0	4.07	* 3.89	3.77	0	0	0	0
15	0	0	0	0	0	4.08	3.85	* 3.63	0	0	0	0
16	0	0	0	0	0	* 4.13	* 3.85	3.99	0	0	0	0
17	0	0	0	0	0	* 3.91	4.01	3.66	0	0	0	0
18	0	0	0	0	0	3.89	* 3.76	* 3.58	0	0	0	0
19	0	0	0	0	0	3.77	3.86	4.12	0	0	0	0
20	0	0	0	0	0	* 3.80	3.81	* 4.22	0	0	0	0
21	0	0	0	0	0	3.83	* 3.65	1.50	0	0	0	0
22	0	0	1.86	0	0	3.99	3.97	0	0	0	0	0
23	0	0	3.24	0	0	4.17	* 3.94	0	0	0	0	0
24	0	0	* 2.95	0	0	3.99	3.95	0	0	0	0	0
25	0	0	* 3.78	0	0	4.06	* 3.96	0	0	0	0	0
26	0	0	* 3.23	0	0	4.04	4.10	0	0	0	0	0
27	0	0	3.30	0	0	4.06	3.91	0	0	0	0	0
28	0	0	* 3.36	0	0	4.06	* 3.91	0	0	0	0	0
29	0	0	3.31	0	0	4.07	4.07	0	0	0	0	0
30	0	0	3.33	0	0	* 4.11	* 4.26	0	0	0	0	0
31	0	0	* 3.40	0	0	4.42	0	0	0	0	0	0
Sum	0	0	31.76	34.29	0	112.73	123.71	82.23	0	0	0	0
Current Year 2003												
Period 1938-2003												
Extreme Gage Meters			Extreme-Cubic Meters per Second			Volume-Thousand Cubic Meters						
Month	High	Low	Day	High	Day	Low	Average	Total	Average	Maximum	Minimum	
Jan.	0	0	! 1	0	! 1	0	0	0	37.9	2,504	0	
Feb.	0	0	! 1	0	0	! 1	0	0	140	9,264	0	
Mar.	1.060	0	25	3.78	! 1	0	1.02	2,744	2,668	9,807	0	
April	.980	0	1	3.40	! 11	0	1.14	2,963	10,547	15,274	0	
May	0	0	! 1	0	! 1	0	0	0	10,291	19,869	0	
June	1.190	0	16	4.40	1	0	3.76	9,740	11,252	19,360	0	
July	1.330	1.050	17	5.55	20	3.50	3.99	10,689	11,604	18,714	0	
Aug.	1.300	0	2	4.44	! 21	0	2.65	7,105	11,082	15,665	0	
Sept.	0	0	! 1	0	! 1	0	0	0	5,226	15,269	0	
Oct.	0	0	! 1	0	! 1	0	0	0	55.3	1,743	0	
Nov.	0	0	! 1	0	! 1	0	0	0	0	0	0	
Dec.	0	0	! 1	0	! 1	0	0	0	0	0	0	
Yearly	1.330	0	!	5.55	!	0	1.05	33,241	62,903	103,511	8,207	

* Discharge measurement(s) made on this day ! And other days

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

08-3705.00 RIO GRANDE AT FORT QUITMAN, TEXAS
NEAR COLONIA LUIS LEON, CHIHUAHUA

DESCRIPTION: Cableway, bubbler gage, water-stage recorder and data collection platform with GOES high data rate telemetry located on the left bank of the rectified channel of the Rio Grande at latitude 31°05'10", longitude 105°36'30", and river kilometer 1,888; 2.4 river kilometers downstream from Old Fort Quitman, 14.5 kilometers southeast of Esperanza, Texas, and 28.2 kilometers southeast of McNary, Texas. The zero of the gage is 1,052.35 meters above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 23 current-meter measurements during the year and a continuous record of gage heights. Computations by shifting control methods. Records available: 1889 through 2003.

REMARKS: Reservoirs, diversions, and drainage returns modify the river flow at this station.

EXTREME FLOWS FROM RECORDS:** Momentary: Max. 300 CMS October 5, 1946 with a gage height of 3.05 meters. Min. frequently no flow.

			Average Flow in Cubic Meters per Second**															
Daily:	Max.	167	May 19, 1942		Min.	0	Frequently											
Monthly:	Max.	142	May 1942		Min.	0	Several months since 1951											
Yearly:	Max.	49.8	1942		Min.	0.07	1965											

MEAN DAILY DISCHARGE IN CUBIC METERS PER SECOND 2003 --- ANNUAL AND PERIOD SUMMARY												
Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	6.96	1.72	1.92	2.71	1.32	0.45	1.05	0.70	0.46	0.05	0.30	0.98
2	6.69	1.85	1.86	* 1.82	* .90	.38	1.03	.57	.48	* .05	.26	.91
3	6.59	1.73	1.80	1.30	.70	.46	.91	.36	.40	.06	.27	* .90
4	6.33	1.46	1.70	1.19	.71	.48	.80	.31	* .24	.09	.32	1.04
5	6.47	* 1.47	* 1.90	1.18	.58	.47	.68	.34	.25	.12	* .40	1.30
6	6.45	1.39	1.80	1.20	.70	.56	.66	* .35	.26	.14	.48	1.43
7	6.16	1.42	1.84	1.13	.88	.64	.94	.30	.39	.17	.58	1.73
8	* 5.49	1.42	2.12	.89	.67	.46	.79	.69	.42	8.41	.68	1.79
9	5.23	1.54	1.89	1.14	.57	.47	* .40	.50	3.82	1.41	.61	1.85
10	5.36	1.85	1.77	1.07	.61	.43	.32	.47	1.87	1.27	.55	1.90
11	5.39	2.01	2.08	2.58	.65	.60	.38	.38	1.68	1.12	.60	1.92
12	5.58	1.47	2.36	2.43	.59	.47	.42	.49	1.18	1.00	.68	1.93
13	6.05	1.41	1.98	1.88	.71	.47	.42	.53	.95	.87	.70	1.63
14	5.70	1.35	1.95	2.24	.70	.41	.43	.31	.93	.74	.95	1.74
15	5.39	1.65	2.16	1.96	.82	.49	.48	.37	.48	.62	1.14	1.57
16	5.23	1.65	1.99	* 1.23	.69	.66	.48	.34	.38	* .54	1.53	1.68
17	4.02	1.54	1.96	1.61	.44	.61	1.57	.27	.32	.51	* 1.58	1.73
18	3.70	1.36	1.81	2.39	.36	.38	1.24	.23	.26	.48	1.27	* 1.26
19	3.00	1.30	1.26	2.00	.39	* .42	1.08	.23	.24	.45	.96	1.04
20	2.65	* 1.45	1.20	2.50	.35	.59	1.52	* .18	.24	.42	1.03	.92
21	2.47	1.97	* 1.31	3.03	.30	.81	.80	.18	.19	.40	1.03	.89
22	2.46	2.12	1.27	2.26	.85	.85	.93	.09	.19	.36	.96	.97
23	* 2.37	2.93	1.39	2.37	.45	.98	.77	.10	.19	.32	.97	.89
24	2.40	2.28	1.60	2.18	.73	.70	* .50	.11	* .19	.29	.97	.87
25	2.01	1.79	1.31	2.07	.41	.55	.50	.13	.18	.26	.92	.87
26	1.99	1.95	1.27	1.72	.60	1.42	.41	.44	.16	.28	.89	.88
27	1.75	1.73	1.22	1.88	.48	1.72	.52	.14	.13	* .39	.87	.89
28	1.82	2.09	1.33	1.82	.43	8.81	.61	.15	.11	.43	.82	.91
29	1.95		1.06	1.33	.32	1.46	1.10	.53	.08	.31	.86	.93
30	1.80		1.64	.95	.36	1.30	1.32	2.69	.06	.25	.88	.93
31	1.70		3.46		.50		.96	2.27		.29		.96
Sum	131.16	47.90	54.21	54.06	18.77	28.50	24.02	14.75	16.73	22.10	24.06	39.24
Current Year 2003												
Period 1938-2003												
Extreme Gage Meters												
Extreme-Cubic Meters per Second												
Volume-Thousand Cubic Meters												
Month	High	Low	Day	High	Day	Low	Average	Total	Average	Maximum	Minimum	
Jan.	1.625	1.265	3	7.99	31	1.49	4.23	11,332	11,426	96,674	0	
Feb.	1.430	1.235	21	3.86	19	1.20	1.71	4,139	8,832	68,720	0	
Mar.	1.430	1.215	31	3.78	29	.99	1.75	4,684	8,060	72,889	0	
April	1.420	1.195	21	3.50	8	.80	1.80	4,671	10,154	94,942	0	
May	1.335	1.080	24	2.71	19	.26	.61	1,622	15,216	381,665	0	
June	2.410	1.080	28	60.9	19	.28	.95	2,462	13,679	295,595	0	
July	1.610	1.125	17	7.13	10	.28	.77	2,075	19,789	173,266	4.7	
Aug.	2.005	1.055	30	31.5	!20	.08	.48	1,274	18,243	158,563	20.6	
Sept.	2.050	1.065	9	36.5	4	.06	.56	1,445	20,790	181,266	0	
Oct.	1.230	1.180	28	8.41	!25	.05	.71	1,909	21,099	114,377	0	
Nov.	1.335	1.185	17	1.70	!2	.25	.80	2,079	14,581	106,523	0	
Dec.	1.375	1.250	11	2.19	3	.84	1.27	3,390	14,731	152,593	0	
Yearly	2.410	1.055		60.9		0.05	1.30	41,082	176,600	1,569,390	2,050	

* Discharge measurement(s) made on this day ! And other days

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

08-3712.00 RIO GRANDE NEAR CANDELARIA, TEXAS
AND SAN ANTONIO DEL BRAVO, CHIHUAHUA

DESCRIPTION: Cableway, bubbler gage, DCP with GOES high data rate telemetry, and water stage digital recorder located on the left bank of the Rio Grande at San Antonio Diversion Dam, Latitude 30°10'30", Longitude 104°41'10" and river kilometer 1,672, 0.5 river kilometer upstream from Capote Creek and about 4.0 kilometers north of Candelaria, Presidio County, Texas and San Antonio, Chihuahua. The zero of the present gage established in November 2003 has not been determined.

RECORDS: Based on 10 current-meter measurements during the year and a continuous record of gage heights. Computations by shifting control methods. Records available: November 19, 1975 through 2003.

REMARKS: Reservoirs, diversions, and drainage returns modify the flow at this station. Prior to June 1979 the zero of the gage was 871.07 meters above mean sea level, U. S. C. & G. S. datum. From June 1979 to June 25, 2003 the zero of the gage was 871.11 meters above mean sea level, U. S. C. & G. S. datum. On June 25, 2003, a flash flood destroyed the station. A new station at the same site was constructed on November 13, 2003.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 561 CMS on September 30, 1978 with a gage height of 3.31 meters. Min. frequently no flow.

			Average Flow in Cubic Meters per Second**					
Daily:	Max.	222	Dec. 23, 1986			Min.	0	Frequently
Monthly:	Max.	72.2	Dec. 1986			Min.	0	Frequently
Yearly:	Max.	37.7	1987			Min.	0.59	1977

MEAN DAILY DISCHARGE IN CUBIC METERS PER SECOND 2003 --- ANNUAL AND PERIOD SUMMARY												
Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	7.70	2.06	2.18	0.89	0.94	0.02						0
2	7.41	2.14	2.17	.92	.93	.02						0
3	7.35	1.92	* 2.01	.87	.84	.01						0
4	7.29	1.78	2.24	2.79	.55	0						* .05
5	7.32	1.77	2.05	* 2.39	* .38	0						.10
6	* 7.40	* 1.76	1.88	1.66	.37	0						.15
7	7.39	1.63	1.74	1.14	.42	0						.20
8	7.33	1.37	1.61	.92	.28	0						.25
9	7.34	1.33	1.62	.80	.19	0						.30
10	7.39	1.25	1.69	.76	.12	.06						.35
11	7.39	1.22	1.74	.76	.07	1.53						.40
12	6.99	1.22	2.00	.72	.05	.19						.45
13	6.34	1.17	1.90	.57	.03	.10						.50
14	5.96	1.32	1.59	.63	* .01	.05						.55
15	6.03	1.80	1.88	1.18	.01	.02						.60
16	6.25	1.43	2.40	2.15	.01	.01						* .65
17	6.56	1.24	2.04	1.68	0	0						.70
18	6.65	1.14	1.93	1.83	0	0						.68
19	6.43	1.47	1.96	1.83	0	0						.67
20	6.02	1.78	1.95	1.19	0	0						.65
21	5.43	5.18	1.83	* .85	0	0						.63
22	4.90	4.46	1.81	1.36	0	0						.62
23	4.49	6.74	1.35	1.51	0	0						.60
24	3.56	6.81	1.08	1.47	0	0						.59
25	3.22	3.37	1.00	2.28	0							.57
26	3.02	3.17	.94	1.79	0							.55
27	3.07	3.52	.97	1.48	.14							.54
28	2.68	2.66	1.06	1.44	.17							.52
29	2.40		1.08	1.23	.13							.50
30	* 2.32		.96	.90	.09							.49
31	1.96		.94		.05							.47
Sum	175.59	66.71	39.99									13.33
	175.59	51.60	5.78									
Current Year 2003												Period 1975-2003
Extreme Gage Meters				Extreme-Cubic Meters per Second				Volume-Thousand Cubic Meters				
Month	High	Low	Day	High	Day	Low	Average	Total	Average	Maximum	Minimum	
Jan.	2.150	1.890	1	7.79	31	1.86	5.66	15,171	19,469	183,420	0	
Feb.	2.060	1.850	21	7.90	18	1.06	2.38	5,764	14,416	122,892	0	
Mar.	1.920	1.835	115	2.50	26	.90	1.66	4,458	11,952	101,919	0	
April	1.925	1.800	4	3.20	13	.52	1.33	3,455	12,091	91,771	10.5	
May	1.880	1.480	1	1.02	16	0	.19	499	14,386	169,009	0	
June									18,128	186,724	174	
July									23,472	148,433	97.6	
Aug.									23,773	88,466	491	
Sept.									28,207	166,806	386	
Oct.									30,182	125,676	0	
Nov.									22,571	132,602	0	
Dec.			17	.70	1	0	.43	1,152	20,743	187,408	0	
Yearly									239,390	1,191,590	18,685	

* Discharge measurement(s) made on this day ! And other days

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

08-3715.00 RIO GRANDE ABOVE RIO CONCHOS NEAR PRESIDIO, TEXAS
AND OJINAGA, CHIHUAHUA

DESCRIPTION: Cableway, bubbler gage, and water-stage recorder (graphic and digital), DCP with GOES high data rate telemetry, located on the left bank at latitude 29°36'15", longitude 104°27'05", and river kilometer 1,551; 8.0 river kilometers upstream from the international highway bridge between Presidio, Texas and Ojinaga, Chihuahua and 3.8 river kilometers upstream from the confluence with the Rio Conchos. The zero of the gage is 784.29 meters above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 26 current-meter measurements during the year and a continuous record of gage heights. Computations by shifting control methods. Records available: 1889 through 2003.

REMARKS: Reservoirs, diversions, and drainage returns modify the river flow at this station. Prior to 1978 the zero of the gage was 785.37 meters above mean sea level, U. S. C. & G. S. datum.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 396 CMS on June 14, 1905. Highest flow recorded since 1924 was 146 CMS, with a gage height of 3.22 meters, on May 26, 1942. Min. frequently no flow.

		Average Flow in Cubic Meters per Second**											
Daily:	Max.	388	June 13 & 14, 1905									Min. 0	Frequently
Monthly:	Max.	287	June	1905								Min. 0	Frequently
Yearly:	Max.	55.8		1907								Min. 0.04	1964

MEAN DAILY DISCHARGE IN CUBIC METERS PER SECOND 2003 --- ANNUAL AND PERIOD SUMMARY												
Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	6.39	1.82	2.52	0.26	0.31	0.04	1.63	1.02	2.69	0.04	0.34	* 0.59
2	6.62	1.68	2.25	* .24	.29	.04	2.06	.67	* .95	.03	.45	.56
3	6.80	1.64	* 1.86	.23	.42	.03	.83	.43	1.06	.03	* .39	.47
4	6.81	1.53	1.72	.23	.36	* .02	.40	.30	.81	.03	.16	.36
5	6.81	1.45	1.54	.29	* .47	.02	.32	* .09	.61	.02	.30	.35
6	* 6.86	* 1.25	1.43	.60	.23	.02	.30	.08	.48	.02	.42	.28
7	6.71	1.15	1.36	.80	.18	.02	* .38	.05	.42	.02	.26	.30
8	6.73	1.30	1.23	.90	.15	.02	1.07	.03	.33	10.3	.29	.31
9	6.53	1.37	1.19	.53	.13	.02	2.40	.03	2.11	* 11.1	.31	.16
10	6.33	1.71	1.16	.38	.09	.02	1.74	1.73	1.68	2.03	.34	.07
11	6.16	1.38	1.24	.35	.08	.02	2.81	3.39	2.03	23.4	.38	.06
12	6.29	1.36	1.09	.29	.10	.02	.51	.41	1.00	7.95	.43	.05
13	6.15	1.40	1.03	.21	.08	.02	.21	.13	.42	6.46	.48	.04
14	5.78	1.29	1.12	.17	* .07	.01	.09	.08	.22	6.44	.49	.03
15	5.46	1.47	1.02	.15	.07	.01	* .05	.02	.14	3.64	.35	* .04
16	5.17	1.75	.98	.14	.08	.01	.06	.17	.09	1.50	.32	.04
17	5.11	1.91	.92	.17	.07	.01	3.10	.94	.06	.79	* .20	.03
18	5.23	1.74	.98	.51	.06	* .01	6.81	.53	.16	.57	.19	.03
19	5.20	1.37	.92	.76	.07	.01	4.67	1.36	.26	.40	.22	.03
20	5.16	1.31	.86	.68	.06	.02	1.67	* .49	.12	* .22	.26	.03
21	4.97	5.71	.86	* .66	.05	.02	1.84	.30	.06	.19	.22	.03
22	4.64	3.76	.90	.56	.05	.03	.88	.16	.07	.42	.13	.03
23	4.03	3.31	.86	.43	.05	.03	.67	.03	* .10	.54	.04	.03
24	3.46	2.74	.87	.33	.06	.18	.34	.15	.07	.35	.26	.14
25	3.02	3.79	* .79	.47	.06	3.46	.13	.26	.05	.28	.22	.06
26	2.72	3.65	.66	.50	.04	1.54	.06	.78	.06	.44	.27	.03
27	2.65	2.60	.51	.52	.36	2.06	6.81	.93	.09	.43	.18	.08
28	2.52	2.58	.41	.57	.40	2.38	3.30	1.05	.07	.42	.05	.07
29	2.28		.33	.42	.15	3.30	10.5	.74	.09	.36	.30	.17
30	* 2.06		.29	.36	.07	4.55	4.07	6.90	.06	.33	.41	.10
31	1.88		.27		.04	1.90	17.4			.33		.09
Sum	156.53	58.02	33.17	12.71	4.70	17.94	61.61	40.65	16.36	79.08	8.66	4.66

Current Year 2003 Period 1938-2003												
Extreme Gage Meters				Extreme-Cubic Meters per Second				Volume-Thousand Cubic Meters				
Month	High	Low	Day	High	Low	Day	Average	Total	Average	Maximum	Minimum	
Jan.	0.670	0.345	6	7.11	31	1.72	5.05	13,524	12,124	183,346	0	
Feb.	.970	.305	21	13.2	7	1.14	2.07	5,013	9,279	119,491	0	
Mar.	.430	.170	1	2.62	31	.25	1.07	2,866	7,157	91,778	0	
April	.310	.130	8	1.00	16	.09	.42	1,098	6,437	87,920	0	
May	.400	.115	27	1.54	!20	.04	.15	406	11,365	295,521	0	
June	.830	.080	25	8.53	!12	.01	.60	1,550	13,019	267,019	0	
July	1.205	.095	29	17.7	26	.02	1.99	5,323	17,150	191,983	0	
Aug.	1.385	.070	31	23.8	!15	.01	1.31	3,512	17,964	164,116	0	
Sept.	.830	.130	1	8.85	24	.03	.55	1,414	20,274	185,694	0	
Oct.	2.115	.060	11	53.6	!5	.02	2.55	6,833	20,995	129,311	0	
Nov.	.280	.100	!5	.64	23	.02	.29	748	12,485	125,343	0	
Dec.	.285	.115	1	.63	!19	.02	.15	403	12,509	167,944	0	
Yearly	2.115	0.060		53.6		0.01	1.35	42,690	160,758	1,450,617	1,174	

* Discharge measurement(s) made on this day ! And other days

** Period June 1900-March 1914; September 1919-March 1920; and 1924-2003

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

08-3730.00 RIO CONCHOS NEAR OJINAGA, CHIHUAHUA

DESCRIPTION: Cableway, gravity well, and water-stage recorder located on the right bank at latitude 29° 34' 57", longitude 104° 25' 52", 1.0 river kilometer from the confluence with the Rio Grande, 4.0 kilometers northwest of Ojinaga, Chihuahua, and 6.0 kilometers northwest of Presidio, Texas. This stream enters the Rio Grande at river kilometer 1,547, 18.7 river kilometers upstream from the "Rio Grande below Rio Conchos" Gaging Station. The zero of the gage is 780.40 meters above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 166 discharge measurements during the year. Records available: 1896 through 1913; 1924 through 2003. Prior to April 4, 1954, flow records were determined from records of the Rio Grande at stations located upstream and downstream from the Rio Conchos confluence.

REMARKS: Reservoirs, diversions, and drainage returns modify the river flow at this station. La Boquilla Reservoir, La Colina Reservoir, and Luis L. Leon Reservoir are located 405, 393, and 183 river kilometers, respectively, upstream from this station. Francisco I. Madero Reservoir is located on the Rio San Pedro, a tributary which enters the Rio Conchos 283 river kilometers upstream from this station. Power generation facilities: La Boquilla 14,647 kw., La Colina 3,620 kw., Francisco I. Madero and Luis L. Leon, none. The station was relocated on January 20, 1978 incident to the Rio Grande channel rectification in the Presidio-Ojinaga area.

EXTREME FLOWS FROM RECORDS: Momentary Max (period 1968-2000) 2,020 CMS on September 30, 1978 with a 7.53 meter gauge.

EXTREME FLOWS FROM RECORDS: Momentary: "Max." (period 1968-2000) 2,020 CMS, on September 30, 1978 with a 7.53 meter gage height. The greatest recorded flow occurred September 11, 1904 with a peak flow estimated at 4,590 CMS. Min. 0.21 CMS on June 12, 1995 with a 0.46 meter gage height. During the period 1996 to 1998, it is very probable that a minimum momentary flow smaller than the referenced one occurred; however, that data is not available.

Daily: Max. 1,490 Average Flow in Cubic Meters per Second** Oct. 1, 1978 Min. 0.09 June 11, 1996
 Monthly: Max. 496 Sept. 1991 Min. 0.29 November 2001
 Yearly: Max. 83.6 1991 Min. 2.38 1995

MEAN DAILY DISCHARGE IN CUBIC METERS PER SECOND 2003 --- ANNUAL AND PERIOD SUMMARY

* Discharge measurement(s) made on this day

! And other days

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

08-3740.00 ALAMITO CREEK NEAR PRESIDIO, TEXAS

DESCRIPTION: Gravity well and water-stage recorder (graphical and digital), and DCP with GOES high data rate telemetry located on the left bank 91.4 meters upstream from the highway bridge on Farm-to-Market Road 170 at latitude 29° 31'25", longitude 104° 17'15", about 610 meters upstream from the confluence with the Rio Grande, and about 9.7 kilometers southeast of Presidio, Texas. This stream enters the Rio Grande near the lower end of the Presidio valley at river kilometer 1,529, 13.8 river kilometers downstream from the international highway bridge between Presidio, Texas and Ojinaga, Chihuahua. Measurements of high flows are made from the highway bridge. The zero of the gage is 771.785 meters above mean sea level U. S. C. & G. S. datum.

RECORDS: Based on 28 current-meter measurements during the year at low and medium flows, a high flow rating curve determined by slope-area calculations, and a continuous record of gage heights. Computations by shifting control methods. Records available: 1932 through 2003.

REMARKS: This station was relocated to its current site from the downstream side of the highway bridge on Farm-to-Market Road 170 on August 26, 2003. A small irrigation reservoir (San Esteban) 16.9 kilometers south of Marfa, Presidio County, Texas and irrigation diversions below the reservoir modify the flow of this spring-fed creek. Backwater from the Rio Grande begins to affect the station record when the flow at the station on the Rio Grande below Rio Conchos reaches about 991 CMS.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 1,600 CMS, determined by slope-area calculations, on September 2, 1962, with a gage height of 4.13 meters. Min. no flow occasionally.

Average Flow in Cubic Meters per Second

Daily:	Max.	351	Sept. 21, 1974	Min.	0	Occasionally
Monthly:	Max.	28.3	Sept. 1974	Min.	0	Oct. 2001
Yearly:	Max.	2.75	1974	Min.	0.01	2001

MEAN DAILY DISCHARGE IN CUBIC METERS PER SECOND 2003 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.02	0.02	0.02	0.02	0.02	0.04	0.01	0.01	0.22	0.01	0.02	0.03
2	.02	.02	.02	.02	.02	.02	.01	.01	.07	* .01	.02	.03
3	.03	.02	.02	* .02	.02	.02	.01	.01	.04	.01	.02	* .03
4	.03	* .02	.02	.02	.02	* .01	.01	.01	* .02	.02	.03	.03
5	.03	.02	* .02	.02	.02	.01	.01	.01	.02	.04	* .03	.03
6	.03	.02	.02	.02	* .02	.01	.01	* .01	.02	1.43	.03	.03
7	* .03	.02	.02	.02	.02	.01	* 10.1	.01	.01	.18	.03	.03
8	.03	.02	.02	.02	.02	.01	* 4.60	.01	.03	27.8	.03	.03
9	.03	.02	.02	.02	.02	.64	.01	.01	.01	* 6.83	.03	.03
10	.03	.02	.02	.02	.02	7.84	.01	.01	.01	1.72	.03	.03
11	.02	.02	.02	.02	.02	.01	.01	.51	.01	40.8	.03	.04
12	.02	.02	.02	.02	.02	.01	.01	.01	.01	2.73	.03	.04
13	.02	.02	.02	.02	.02	.01	.01	.01	.01	.52	.03	.04
14	.02	.02	.02	.02	.02	.01	.01	.01	.01	.38	.03	.04
15	.02	.02	.02	.02	.02	.01	.01	.01	.01	.32	.03	.04
16	.02	.02	.02	.02	* .01	.01	.01	.01	.01	.20	.03	.04
17	.02	.02	.02	.02	.02	.01	* 5.26	.01	.01	.11	.03	.04
18	.02	.02	.02	.02	.02	.01	.11	.01	.01	.09	* .03	.04
19	.02	.02	.02	.02	.02	.01	.01	.01	.01	.07	* .03	.04
20	.02	.04	.02	.02	.02	.04	.01	.01	.01	.05	.03	.04
21	.02	.07	.02	.02	.02	.01	.01	* .01	.01	.04	.03	.04
22	.02	.02	* .02	.02	.02	.01	.01	.01	.01	* .03	.03	.04
23	.02	.02	.02	.02	.02	.01	.01	.96	.01	.02	.03	.04
24	.02	.02	.02	.02	.02	.01	.01	.05	* .01	.02	.03	.04
25	.02	.02	.02	.02	* 31.2	.01	* .49	.01	.01	.02	.03	.04
26	.02	.02	.02	.02	.28	.01	28.2	.01	.02	.03	.04	
27	.02	.02	.02	* 1.65	.01	27.4	* 11.5	.01	.03	.03	.04	
28	.02	.02	.02	1.11	.15	9.35	.01	.01	.03	.03	.03	
29	.02	.02	.02	.45	.99	.55	6.01	.01	.03	.03	.03	
30	.02	.02	.02	.21	* .93	.02	13.7	.01	.03	.03	.03	
31	.02	.02	.02	.08	.01	.01	6.19	.01	.03	.03	.03	
Sum	0.70	0.63	0.60	4.02	42.33	57.62	67.83	0.65	83.62	0.87	1.10	

Current Year 2003

Period 1932-2003

Month	Extreme Gage Meters			Extreme-Cubic Meters per Second			Volume-Thousand Cubic Meters				
	High	Low	Day	High	Low	Average	Total	Average	Maximum	Minimum	
Jan.	1.375	1.350	! 3	0.03	! 1	0.02	0.02	60.5	146	370	26.8
Feb.	1.600	1.335	21	.21	! 1	.02	.02	54.4	189	3,853	24.2
Mar.	1.335	1.305	! 1	.02	! 1	.02	.02	53.6	26.8	1,256	26.8
April	1.340	1.315	! 1	.02	! 1	.02	.02	51.8	271	4,550	25.9
May	1.715	1.295	27	3.94	! 1	.02	.13	347	854	10,530	15.6
June	2.020	1.220	25	99.2	! 3	.01	1.41	3,657	2,049	15,607	25.9
July	2.250	1.220	27	170	! 1	.01	1.86	4,978	3,173	22,813	11.7
Aug.	2.255	1.165	30	151	! 28	0	2.19	5,861	3,287	20,167	26.8
Sept.	1.535	1.445	1	.94	5	.01	.02	56.2	4,933	73,244	9.5
Oct.	2.115	1.440	11	114	! 1	.01	2.70	7,225	1,957	23,731	0
Nov.	1.440	1.430	! 3	.03	! 1	.02	.03	75.2	199	3,150	18.1
Dec.	1.435	1.430	! 11	.04	! 1	.03	.04	95.0	154	503	26.8
Yearly	2.255	1.165		170		0	0.71	22,515	17,239	86,682	376

* Discharge measurement(s) made on this day ! And other days

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

08-3742.00 RIO GRANDE BELOW RIO CONCHOS NEAR PRESIDIO, TEXAS
AND OJINAGA, CHIHUAHUA

DESCRIPTION: Cableway, bubbler gage, water-stage recorders (graphic and digital), DCP with GOES high data rate telemetry, located on the left bank at latitude 29° 31' 10", longitude 104° 17' 10", and river kilometer 1,529; 0.6 river kilometer downstream from Alamito Creek and 14.4 river kilometers downstream from the international highway bridge between Presidio, Texas and Ojinaga, Chihuahua. The zero of the gage is 771.75 meters above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 26 current-meter measurements during the year and a continuous record of gage heights. Computations by shifting control methods. Records available: 1955 through 2003. Records are also available from 1896 through June 13, 1932 for a station located about 19.5 river kilometers downstream from the Rio Conchos and 2.1 kilometers upstream from Alamito Creek; and from June 14, 1932 through 1954 for a station about 3.2 river kilometers downstream from the Rio Conchos and 18.3 river kilometers upstream from Alamito Creek.

REMARKS: Reservoirs, diversions, and drainage returns modify the river flow at this station. Prior to December 1, 1979 the zero of the gage was 772.97 meters above mean sea level, U. S. C. & G. S. datum. A concrete control weir at this station was partially removed in December 1991.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 1,730 CMS on September 30, 1978, with a gage height of 4.70 meters. The greatest recorded flow occurred September 11, 1904, with a peak flow estimated at 4,590 CMS at a station 19.0 kilometers upstream. Min. 0.01 CMS several days in July 1955 and June 30, 1958.

		Average Flow in Cubic Meters per Second**											
Daily:	Max.	1,510	Oct. 1, 1978		Min.	0.15		June 21, 2003					
Monthly:	Max.	544	Sept. 1991		Min.	0.50		Apr. 2003					
Yearly:	Max.	98.1	1991		Min.	5.53		2003					

MEAN DAILY DISCHARGE IN CUBIC METERS PER SECOND 2003 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	
1	6.00	2.39	2.86	0.70	0.50	0.88	9.30	3.71	11.9	0.33	2.26	* 1.56	
2	6.16	2.35	2.51	.59	.48	* .60	* 4.21	2.73	* 6.30	* .30	2.18	1.40	
3	6.11	2.32	2.38	*	.60	.47	.31	2.47	1.92	.476	.27	* 2.43	
4	6.18	*	2.24	2.08	.58	.54	.20	1.01	1.22	3.56	.25	2.00	
5	6.33	2.29	*	1.79	.41	.57	.22	.50	* .74	3.02	.25	1.68	
6	6.33	2.12	1.63	.61	*	.58	.30	.58	.27	2.80	1.04	1.67	
7	*	6.17	2.10	1.64	.77	.51	.23	4.09	.23	2.52	.22	1.81	
8	6.00	2.24	1.48	.74	.36	.24	12.1	.23	2.32	60.1	2.11	.86	
9	5.92	2.34	1.43	.75	.20	5.33	27.6	.25	2.54	174*	1.60	.97	
10	5.74	2.46	1.48	.60	.16	18.2	28.6	.24	3.85	142	1.50	1.00	
11	5.69	2.33	1.38	.60	.18	8.06	5.86	6.04	26.8	172	2.00	1.08	
12	5.79	2.39	1.32	.53	.25	4.77	2.84	1.50	9.69	117	2.02	1.24	
13	5.96	2.49	1.18	.48	.25	.96	2.19	.39	5.16	23.3	1.94	1.40	
14	5.54	2.47	1.54	.48	.27	.23	1.49	.22	2.34	14.1	1.70	1.58	
15	5.31	2.38	1.35	*	.39	.26	.21	*	.38	.20	1.97	10.6	
16	4.89	2.60	1.11	.26	.20	*	.23	.80	.20	1.52	8.61	1.43	
17	4.68	2.79	1.16	*	.25	.21	.22	6.34	.94	1.34	8.03	1.64	
18	4.68	2.66	1.27	.37	.32	.19	13.1	*	.95	1.36	7.86	1.70	
19	4.72	2.50	1.34	.55	*	.31	.18	12.2	1.66	1.40	6.93	*	
20	4.70	6.23	1.22	.55	.25	.20	4.53	1.30	1.22	*	6.13	1.43	
21	4.38	42.8	1.39	.54	.27	.15	3.24	.58	.99	4.48	1.42	1.03	
22	4.20	6.15	1.36	.44	.29	.17	2.76	.34	.98	5.27	.94	.53	
23	3.88	4.83	1.31	.40	.32	.17	2.46	.73	*	.83	5.21	.81	
24	3.65	4.21	1.35	.33	.23	.15	2.07	2.09	1.17	4.74	.74	.54	
25	3.47	4.24	*	1.20	.26	.26	*	94.3	1.18	5.05	2.97	4.14	.66
26	3.32	4.52	.76	.39	.31	34.5	.42	12.6	1.42	3.98	.93	.55	
27	3.21	3.51	.81	.40	12.1	6.23	15.3	12.2	.73	3.92	.92	.69	
28	3.11	3.07	.79	.47	8.90	18.5	8.97	4.64	.60	4.09	.87	.59	
29	2.86		.76	.49	1.55	8.22	30.6	14.0	.55	4.04	.77	.57	
30	2.66		.74	.47	.88	14.1	42.5	24.0	.40	4.01	1.02	.62	
31	2.55		.72		.73		18.6	81.7		3.97		.67	
Sum	150.19	125.02	15.00	32.71	218.25	268.29	182.87	107.01	801.17	45.21	30.78		

Current Year 2003

Period 1968-2003

Month	Extreme Gage Meters			Extreme-Cubic Meters per Second			Volume-Thousand Cubic Meters				
	High	Low	Day	High	Low	Average	Total	Average	Maximum	Minimum	
Jan.	1.150	1.020	6	6.56	31	2.41	4.84	12,976	52,727	277,577	9,935
Feb.	1.905	.980	21	82.3	7	2.03	4.47	10,802	45,789	223,569	5,853
Mar.	.995	.835	1	3.05	27	.64	1.40	3,745	53,095	275,997	3,745
April	.960	.840	7	.87	17	.18	.50	1,296	48,446	199,909	1,296
May	1.550	.785	27	32.5	10	.13	1.06	2,826	60,633	243,287	2,826
June	2.660	.675	25	165	24	.13	7.28	18,857	78,329	383,789	5,647
July	2.380	.880	27	121	26	.25	8.65	23,180	92,299	325,218	13,821
Aug.	2.395	.830	31	125	! 8	.20	5.90	15,800	147,137	866,134	15,800
Sept.	2.115	.895	11	77.1	30	.34	3.57	9,246	277,243	1,410,221	5,648
Oct.	3.145	.865	11	220	! 6	.21	25.8	69,221	139,419	871,689	7,398
Nov.	1.105	.970	3	2.55	26	.57	1.51	3,906	55,461	197,536	3,906
Dec.	1.050	.950	16	1.89	! 25	.47	.99	2,659	43,180	229,318	2,659
Yearly	3.145	0.675		220		0.13	5.53	174,514	1,093,758	3,092,559	174,514

* Discharge measurement(s) made on this day

! And other days

** Period 1968-2003

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

08-3745.00 TERLINGUA CREEK NEAR TERLINGUA, TEXAS

DESCRIPTION: Cableway, bubbler gage, DCP with GOES high data rate telemetry, water-stage recorder (graphical and digital) located on the left bank at latitude 29°12'10", longitude 103°37'10", 4.3 creek kilometers upstream from its confluence with the Rio Grande, and about 13.6 kilometers south of Terlingua, Brewster County, Texas. This creek enters the Rio Grande at river kilometer 1,425, the lower end of Santa Helena Canyon. The zero of the gage is 670.83 meters above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 20 current-meter measurements during the year and a continuous record of gage heights. Computations by shifting control methods. Records available: 1932 through 2003.

REMARKS: Irrigation diversions upstream of the station modify the flow of this spring-fed creek.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 988 CMS on May 24, 1935 with a gage height of 5.36 meters on a gage 0.5 kilometer downstream. Min. no flow on several occasions in 1986.

Daily:	Max. 487	June 1, 1937	Min. 0	August 14 and 15, 1986
Monthly:	Max. 32.6	Sept. 1974	Min. 0.01	Several months 1995-96
Yearly:	Max. 4.28	1990	Min. 0.10	1994

MEAN DAILY DISCHARGE IN CUBIC METERS PER SECOND 2003 --- ANNUAL AND PERIOD SUMMARY												
Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.04	0.03	0.03	* 0.03	* 0.02	0.03	* 6.17	0.07	0.05	* 0.07	0.09	0.09
2	* .04	.03	.03	.03	.03	.03	.03	.07	.05	.07	.09	* .09
3	.04	* .03	.03	.03	.03	* .71	.03	.07	.05	.07	.09	.08
4	.04	.03	* .03	.03	.03	.05	.03	* .07	.05	.06	* .09	.07
5	.04	.03	.03	.03	.03	.03	.03	.07	.05	.07	.09	.07
6	.04	.03	.03	.03	.03	.03	.03	.07	.05	5.76	.09	.06
7	.04	.03	.03	.03	.03	.03	.03	.07	.19	13.2	.09	.06
8	.04	.03	.03	.03	.03	.93	2.77	.06	6.15	49.8	.09	.07
9	.04	.03	.03	.02	.03	.85	.03	.06	* .10	205	.09	.05
10	.04	.03	.03	.02	.03	4.62	.03	.06	.12	53.8	.09	.05
11	.04	.03	.03	.02	.03	.03	.03	.06	* 2.10	171	.09	.05
12	3.32	.03	.03	.02	.03	.03	.03	.06	.44	22.0	.09	.05
13	.04	.03	.03	.02	.03	.03	.03	.06	.03	10.1	.09	.05
14	.04	.03	.03	.02	.03	.03	.03	.06	.02	3.78	.09	.06
15	.04	.03	.03	.02	.03	.03	.03	.06	.03	2.41	.09	.06
16	.04	.03	.03	* .02	.03	.03	.03	.05	.03	1.65	.08	* .08
17	.04	.03	.03	.02	.03	* .03	.03	.05	.03	1.08	.08	.08
18	.04	.03	.03	.02	.03	.03	.03	.05	.03	.72	.08	.08
19	.04	.03	.03	.02	.03	.03	.03	* .05	.02	.41	.08	.08
20	.04	.03	.03	.02	.03	.03	.03	.05	.05	.24	* .08	.08
21	.04	.56	.03	.02	.03	.03	.03	.05	.06	* .09	.08	.08
22	.04	.03	.03	.02	.03	.03	.03	.05	* .06	.07	.08	.08
23	.03	.03	.03	.02	.03	.03	.03	.05	.07	.07	.08	.08
24	.03	.03	.03	.02	.03	.03	.03	.05	.09	.06	.09	.08
25	.03	.03	.03	.02	.03	.03	.03	.05	.11	.06	.09	.08
26	.03	.03	.03	.02	.03	10.9	.03	.05	27.5	.06	.09	.08
27	.03	.03	.03	.02	10.6	1.08	25.7	.05	3.36	.07	.09	.08
28	.03	.03	.03	.02	1.98	.03	.64	.05	.48	.07	.09	.08
29	.03	.03	.03	.02	.03	.29	.07	.05	.14	.07	.09	.08
30	.03	.03	.03	.02	.03	12.7	.07	2.83	.05	.07	.09	.08
31	.03	.03	.03	.02	.03	.03	.07	3.29	.08			.08
Sum	4.43	1.37	0.93	0.68	13.44	32.76	36.21	7.79	41.56	542.06	2.62	2.24
Current Year 2003												
Period 1932-2003												
Extreme Gage Meters												
Extreme-Cubic Meters per Second												
Volume-Thousand Cubic Meters												
Month	High	Low	Day	High	Day	Low	Average	Total	Average	Maximum	Minimum	
Jan.	1.515	0.495	12	18.0	123	0.03	0.14	383	222	1,079	26.8	
Feb.	1.200	.495	21	5.96	11	.03	.05	118	272	5,431	25.1	
Mar.	.495	.495	1	.03	1	.03	.03	80.4	281	2,978	26.8	
April			1	.03	9	.02	.02	58.8	1,485	23,016	25.9	
May	1.990	.455	27	80.9	1	.02	.43	1,161	3,874	32,095	100	
June	1.845	.495	26	50.0	1	.03	1.09	2,830	8,060	67,640	73.4	
July	2.145	.495	27	120	1	.03	1.17	3,129	8,716	35,429	141	
Aug.			31	3.29	16	.05	.25	673	8,271	79,182	80.4	
Sept.	2.105	.795	26	153	13	.01	1.39	3,591	9,892	84,339	62.2	
Oct.	3.480	.795	10	974	25	.04	17.5	46,834	4,679	46,834	62.7	
Nov.	.855	.845	2	.11	3	.07	.09	226	532	7,015	80.1	
Dec.	.850	.835	1	.09	9	.04	.07	194	335	3,800	92.4	
Yearly	3.480	0.455		974		0.01	1.88	59,278	46,619	135,031	3,032	

* Discharge measurement(s) made on this day ! And other days

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

08-3750.00 RIO GRANDE AT JOHNSON RANCH NEAR CASTOLON, TEXAS
AND SANTA ELENA, CHIHUAHUA

DESCRIPTION: Cableway, gravity well, DCP with GOES high data rate telemetry, water-stage recorder (graphical and digital), located on the left bank at latitude 29°02'05", longitude 103°23'25", and river kilometer 1,388; 2.2 river kilometers upstream from the old Johnson Ranch headquarters, 9.7 river kilometers downstream from Smoky Creek, and 14.8 river kilometers upstream from Chizos Crossing and the Chihuahua-Coahuila state line. The zero of the gage is 623.41 meters above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 21 current-meter measurements during the year and a continuous record of gage heights. Computations by shifting control methods. Records available: April 1936 through 2003.

REMARKS: Reservoirs, diversions, and drainage returns modify the river flow at this station.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 2,040 CMS, on September 30, 1978 with a gage height of 8.66 meters. A flow estimated at 2,750 CMS with a stage of 7.50 meters occurred at this station site on October 3, 1932. Min. no flow several days in 1953, 1955, 1957, and 1958.

Average Flow in Cubic Meters per Second**											
Daily:	Max.	1,850	Oct. 1, 1978		Min.	0.09	June 11, 1996				
Monthly:	Max.	470	Sept. 1991		Min.	1.21	May 1996				
Yearly:	Max.	97.0	1991		Min.	6.74	2001				

MEAN DAILY DISCHARGE IN CUBIC METERS PER SECOND 2003 --- ANNUAL AND PERIOD SUMMARY												
Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	6.19	2.83	3.73	* 0.65	* 0.10	0.88	* 42.7	33.3	83.4	* 0.61	3.41	1.49
2	* 5.64	2.79	3.19	.65	.10	.59	22.2	12.8	18.2	.52	3.42	* 1.43
3	5.97	* 2.68	2.81	.63	.10	* .51	13.7	6.12	* 7.34	.45	3.39	1.48
4	6.55	2.58	* 2.71	.58	.10	1.03	9.86	* 3.13	5.39	.45	* 3.29	1.41
5	6.18	2.46	2.60	.55	.10	.44	8.89	1.81	3.20	.85	3.16	1.48
6	6.08	2.50	2.10	.52	.09	.25	8.83	1.46	2.18	10.0	2.96	1.53
7	6.44	2.48	2.11	.50	.08	.17	9.05	1.21	1.36	10.9	2.73	1.45
8	6.77	2.37	1.73	.49	.08	.26	88.9	1.05	6.96	29.9	2.39	1.52
9	6.65	2.17	1.53	.43	.08	.92	79.6	.86	1.63	146	2.16	1.48
10	6.45	2.24	1.52	.36	.09	343	79.8	.88	.92	260	2.04	1.40
11	6.13	2.36	1.41	.31	.10	115	47.3	4.78	7.61	599	2.18	1.37
12	13.4	2.33	1.28	.26	.10	8.14	17.3	2.23	14.6	516	2.12	1.35
13	7.64	2.07	1.21	.23	54.5	3.80	7.94	8.65	12.9	190	1.92	1.50
14	7.25	1.80	1.12	.24	7.82	1.75	3.96	1.56	7.26	46.8	2.07	2.33
15	7.23	1.51	1.03	.24	* 1.42	1.21	2.61	.95	4.26	28.1	2.23	2.28
16	6.51	1.60	.98	* 24	.84	1.06	* 2.91	.71	2.43	21.3	2.04	* 2.11
17	5.91	1.54	.98	.25	.77	* .90	109	.56	* 1.97	15.1	1.97	2.01
18	5.51	1.57	.95	.24	.73	.68	68.2	.46	2.03	12.9	1.91	2.02
19	5.13	2.01	.91	.24	.69	.50	18.2	* .39	1.47	10.9	1.88	1.95
20	5.52	2.11	.80	.24	.68	1.36	20.1	.34	1.18	10.4	* 1.87	1.90
21	5.58	2.15	.83	.22	1.28	1.29	10.5	.30	1.08	* 8.28	1.86	1.90
22	4.79	46.3	.81	.21	.67	.63	5.88	.26	1.03	6.92	1.81	1.89
23	4.68	17.0	.78	.17	.28	2.61	3.55	.22	.93	5.23	1.76	1.82
24	4.47	9.34	.85	.14	.16	15.4	2.90	.23	.85	5.34	1.73	1.79
25	4.10	7.11	.80	.13	.13	3.56	2.29	1.16	.79	4.85	1.62	1.61
26	3.27	5.48	.74	.13	.15	148	2.92	13.2	9.59	4.05	1.54	1.53
27	2.95	5.02	.70	.13	13.9	117	49.7	8.01	4.63	3.81	1.48	1.50
28	2.70	4.90	.70	.12	8.74	25.1	48.8	24.9	1.75	3.76	1.43	1.44
29	3.22	.69	.11	17.2	38.0	21.6	8.67	1.08	3.64	1.39	1.43	
30	3.17	.69	.11	6.02	61.1	39.6	22.8	.75	3.47	1.43	1.45	
31	3.01	.68	.11	1.69	59.9	75.6			3.44			1.47
Sum	175.09	141.30	9.32	118.79	895.14	908.69	238.60	208.77	1,962.97	65.19	51.32	

Current Year 2003												Period 1968-2003			
Extreme Gage Meters				Extreme-Cubic Meters per Second				Volume-Thousand Cubic Meters							
Month	High	Low	Day	High	Low	Day	Average	Total	Average	Maximum	Minimum				
Jan.	1.540	1.020	12	28.8	28	2.46	5.65	15,128	53,828	306,158	10,167				
Feb.	2.055	.945	22	82.8	15	1.38	5.05	12,208	45,306	239,000	7,097				
Mar.	1.085	.890	1	4.31	!29	.64	1.39	3,713	50,678	261,098	3,713				
April	.900	.810	1	.68	30	.10	.31	805	45,827	183,591	805				
May	3.080	.745	13	248	! 7	.08	3.83	10,263	62,443	228,534	3,230				
June	4.535	.745	10	558	! 7	.11	29.8	77,340	87,413	442,109	3,899				
July	3.155	.960	27	267	27	1.61	29.3	78,511	103,738	785,117	15,373				
Aug.	2.605	.820	31	154	24	.20	7.70	20,615	152,228	818,986	20,615				
Sept.	2.325	.890	1	112	30	.64	6.96	18,038	103,502	1,217,635	5,619				
Oct.	5.950	.855	!11	840	6	.33	63.3	169,601	161,055	927,275	4,125				
Nov.	1.090	.955	2	3.49	29	1.35	2.17	5,632	57,788	183,566	5,632				
Dec.	1.020	.950	14	2.40	!12	1.32	1.66	4,434	44,502	220,460	4,434				
Yearly	5.950	0.745		840		0.08	13.2	416,288	968,308	3,058,852	212,557				

* Discharge measurement(s) made on this day

! And other days

** Period 1968-2003

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

08-3772.00 RIO GRANDE AT FOSTER RANCH NEAR LANGTRY, TEXAS
AND RANCHO SANTA ROSA, COAHUILA

DESCRIPTION: Cableway, bubbler gage, DCP with GOES high data rate telemetry, concrete control weir, and water-stage recorder (graphic and digital) located on the left bank at latitude 29° 46' 50", longitude 101° 45' 30", and river kilometer 1,058; 152 meters downstream from the Terrell-Val Verde County line, 8.8 kilometers downstream from Lozier Canyon, and about 19.8 kilometers west of Langtry, Val Verde County, Texas. The zero of the gage is 352.71 meters above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 36 current-meter measurements during the year, 28 by the United States Section and 8 by the Mexican Section of the Commission, and a continuous record of gage heights. Computations for medium and high flows by shifting control methods. Low flow computations based on a stable control weir rating curve defined by current-meter measurements. Records available: September 1961 through 2003.

REMARKS: Reservoirs, diversions, and drainage returns modify the river flow at this station. The concrete control weir was placed in operation on February 21, 1967.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 4,190 CMS on November 5, 1978 with a gage height of 11.63 meters. Min. 2.54 CMS on October 12, 2000.

Average Flow in Cubic Meters per Second**

Daily:	Max.	2,310	Sept. 20, 1974	Min.	2.66	October 11, 2000
Monthly:	Max.	443	Sept. 1991	Min.	6.00	May 2000
Yearly:	Max.	110	1991	Min.	12.9	2001

MEAN DAILY DISCHARGE IN CUBIC METERS PER SECOND 2003 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	11.8	10.1	12.2	6.41	5.40	15.4	55.6	21.6	22.6	11.0	12.9	* 8.71
2	11.3	9.91	11.3	6.33	5.23	* 15.9	69.0	38.1	50.0	9.61	12.5	8.66
3	11.2	* 9.81	* 11.0	6.40	5.08	10.9	37.7	38.6	66.1	8.76	* 12.2	8.77
4	11.5	9.80	10.9	6.52	4.99	9.13	38.0	* 24.5	50.7	8.22	12.0	8.86
5	11.6	9.58	10.3	6.12	* 5.22	9.13	23.7	16.8	22.7	8.02	12.0	8.80
6	* 11.2	9.31	9.80	6.05	4.91	9.84	21.6	13.2	16.6	* 11.6	11.9	8.88
7	11.3	9.00	9.06	* 5.79	4.58	7.79	* 23.9	11.3	13.7	17.0	11.8	8.86
8	11.5	8.85	8.63	5.47	4.39	21.5	29.1	10.3	* 12.4	11.2	11.7	8.91
9	11.4	8.86	8.55	5.36	4.48	15.5	38.3	9.39	11.3	23.0	11.6	8.90
10	11.1	8.82	8.27	5.45	4.38	16.0	109	8.65	17.7	32.4	11.6	8.91
11	11.1	8.87	7.99	5.62	4.26	34.6	149 *	8.22	13.2	112	11.5	8.87
12	11.3	8.79	7.90	5.79	4.04	183 *	27.4	7.86	18.9	328	11.4	8.88
13	11.4	8.68	7.70	5.81	4.53	128	20.2	7.59	18.2	306	11.3	8.90
14	13.2	* 8.82	7.47	5.98	9.12	9.36	21.8	7.29	15.3	333	11.3	8.92
15	16.1	8.94	7.50	5.94	24.5	9.79	29.2	7.69	31.2	183 *	11.2	* 8.81
16	14.8	8.73	7.69	5.83	* 22.0	* 13.5	85.3	10.5	18.9	57.6	11.1	8.62
17	* 12.6	8.61	* 8.83	5.74	13.0	12.8	149 *	12.1	15.5	39.4	* 11.1	8.45
18	12.3	8.67	8.67	5.83	10.9	11.1	26.2	* 9.51	14.0	32.7	10.9	8.52
19	12.1	8.34	* 7.95	6.01	* 8.39	9.90	38.7	8.16	50.1	28.1	10.6	9.27
20	12.0	8.04	6.89	5.64	7.01	9.07	66.4	7.55	21.6	* 23.9	10.6	9.41
21	11.8	* 8.30	6.75	5.53	5.83	10.3	* 29.2	6.97	10.9	21.2	10.3	9.43
22	11.6	8.27	6.92	* 5.79	5.10	28.8	24.1	6.54	* 9.57	19.4	10.0	9.45
23	11.5	8.33	6.79	6.17	4.70	15.0	22.8	6.34	9.38	18.6	9.82	9.58
24	11.3	8.71	6.73	8.80	4.21	12.6	17.5	6.00	8.84	* 17.4	9.47	9.60
25	11.1	25.7	6.75	14.2	4.40	11.4	14.0	8.45	8.46	16.4	9.23	9.82
26	11.0	19.0	6.41	9.66	14.9	31.2	12.1	10.3	* 15.2	15.0	9.21	9.76
27	10.8	15.0	6.45	7.76	19.6	123	10.9	8.95	44.1	14.3	9.18	9.95
28	10.7	13.2	6.41	6.99	57.8	138	10.2	6.83	21.5	14.2	* 8.96	10.0
29	10.5		5.96	6.13	28.0	165	14.3	* 7.60	13.1	13.9	8.88	9.90
30	10.3		6.16	5.88	21.0	59.7	44.2	18.8	12.9	13.4	8.88	9.54
31	10.2		6.32		15.5	29.5	65.3			13.2		9.52
Sum		287.04		195.00		1,147.21		430.99		1,761.51		283.46
	361.6	250.25		337.45		1,287.9		654.65		325.13		

Current Year 2003

Period 1968-2003

Month	Extreme Gage Meters			Extreme-Cubic Meters per Second			Volume-Thousand Cubic Meters				
	High	Low	Day	High	Low	Average	Total	Average	Maximum	Minimum	
Jan.	0.605	0.520	15	17.6	31	10.1	11.7	31,242	72,404	259,502	27,740
Feb.	.715	.490	25	30.9	20	7.85	10.3	24,800	64,511	289,215	22,677
Mar.	.545	.460	1	12.6	30	5.71	8.07	21,622	71,227	277,246	21,622
April	.600	.445	24	18.9	10	5.07	6.50	16,848	67,102	192,692	16,484
May	1.170	.435	28	140	12	3.85	10.9	29,156	88,145	289,647	16,069
June	1.955	.480	27	251	7	7.16	38.2	99,119	116,756	477,792	19,498
July	1.860	.515	17	248	29	9.73	41.5	111,275	125,938	435,732	22,016
Aug.	1.120	.460	31	125	24	5.71	13.9	37,238	176,824	929,405	23,366
Sept.	1.420	.490	4	224	25	8.29	21.8	56,562	219,395	1,147,133	22,748
Oct.	2.790	.480	12	424	6	7.64	56.8	152,194	204,308	1,112,382	19,780
Nov.	.550	.490	1	13.1	!28	8.74	10.8	28,091	89,753	441,434	28,091
Dec.	.505	.485	!27	10.2	16	8.29	9.14	24,491	65,051	217,549	24,491
Yearly	2.790	0.435		424		3.85	20.1	632,638	1,361,414	3,465,652	405,582

* Discharge measurement(s) made on this day

! And other days

** Period 1968-2003

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

08-4474.10 PECOS RIVER NEAR LANGTRY, TEXAS

DESCRIPTION: Cableway, concrete control weir, bubbler gage, DCP with GOES high data rate telemetry, water-stage recorder (graphic and digital), located on the right bank at latitude 29° 48' 10", longitude 101° 26' 45", about 12.1 kilometers east of Langtry, Texas, 15.3 river kilometers upstream from the Pecos High Railroad Bridge; 24.1 river kilometers upstream from its confluence with the Rio Grande. This stream enters the Rio Grande at river kilometer 991, 38.0 river kilometers downstream from Langtry, Val Verde County, Texas. The zero of the gage is 345.36 meters above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 31 current-meter measurements during the year, 24 by the United States Section and 7 by the Mexican Section of the Commission, and a continuous record of gage heights. Computations for high flows by shifting control methods. Low and medium flow computations based on stable control weir rating curves defined by current-meter measurements. Records available: July 1967 through 2003. Records are also available for Pecos River near Comstock, 15.3 river kilometers downstream, from March 17 through December 3, 1898 and May 1900 through October 7, 1954; for Pecos River near Shumla, 5.6 river kilometers upstream, from October 8, 1954 through June 1967; and for Pecos River at Mouth near Comstock, from March 1961 through July 2, 1968.

REMARKS: Reservoirs, diversions, and drainage returns modify the river flow at this station.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 16,300 CMS on September 20, 1974, with a gage height of 22.95 meters. The greatest flood of record, which exceeded a gage height of 30.5 meters at this station, occurred on June 28, 1954. The peak discharge was 26,800 CMS at the gaging station located near the railroad bridge 15.3 river kilometers downstream. Min. 1.14 CMS on August 4, 1998 with a gage height of 0.425 meters.

Average Flow in Cubic Meters per Second											
Daily:	Max.	4,330	Sept. 20, 1974		Min.	1.19					August 4, 1998
Monthly:	Max.	382	Sept. 1974		Min.	1.53					July 1998
Yearly:	Max.	42.5	1974		Min.	3.27					1999

MEAN DAILY DISCHARGE IN CUBIC METERS PER SECOND 2003 --- ANNUAL AND PERIOD SUMMARY												
Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	4.83	4.31	4.33	3.35	3.02	3.05	3.00	2.31	3.05	7.40	8.27	* 5.66
2	4.79	4.36	4.37	3.39	2.93	2.92	3.83	2.28	2.85	6.62	8.09	5.66
3	4.79	* 4.47	* 4.30	3.43	2.88	* 2.78	3.19	2.25	2.69	5.85	* 7.93	5.63
4	4.79	4.37	4.19	3.50	2.82	2.52	3.07	* 2.24	2.64	5.41	7.81	5.64
5	4.79	4.29	4.17	3.42	* 2.90	2.42	3.05	2.20	2.82	5.21	7.76	5.60
6	*	4.76	4.29	4.07	3.42	2.82	2.43	3.17	2.18	2.60	* 4.98	7.65
7	4.71	4.26	3.99	*	3.39	2.64	2.42	*	3.94	2.14	2.43	4.65
8	4.62	4.24	3.91	3.29	2.51	2.50	3.46	2.17	*	2.50	4.80	7.47
9	4.68	4.27	3.93	3.23	2.48	2.43	3.21	2.11	2.60	5.63	7.44	5.52
10	4.59	4.24	3.89	3.24	2.55	3.10	3.14	2.21	2.62	60.8	7.52	5.50
11	4.50	4.17	3.86	3.26	2.47	5.49	*	3.13	2.25	2.57	219	7.37
12	4.47	4.23	3.88	3.25	2.33	3.57	2.97	2.24	2.51	199	7.34	5.44
13	4.60	4.24	3.95	3.23	2.51	* 11.0	2.85	2.40	2.41	80.6	7.09	5.44
14	4.63	*	4.26	3.93	3.21	2.34	6.69	2.72	2.45	2.43	33.8	6.96
15	4.60	4.23	3.88	3.21	2.30	3.45	2.64	2.55	3.24	23.1	6.91	* 5.38
16	4.57	4.21	3.98	3.19	*	2.27	*	3.17	2.65	2.58	6.67	* 18.9
17	*	4.48	4.17	*	3.96	3.19	2.19	3.05	3.20	2.51	5.18	16.1
18	4.36	4.11	3.79	3.27	2.10	2.84	3.34	*	2.36	4.11	14.1	6.75
19	4.35	4.11	3.52	3.49	*	2.19	2.70	3.07	2.22	4.34	12.9	6.39
20	4.36	4.14	3.46	3.21	2.22	2.60	2.92	2.15	4.81	11.9	6.26	5.07
21	4.36	*	4.47	3.51	*	3.16	2.20	2.51	*	2.73	2.11	5.31
22	4.33	4.75	3.70	3.20	2.23	2.49	2.62	2.07	*	4.42	10.8	6.13
23	4.25	4.60	3.77	3.23	2.32	2.42	2.52	2.31	4.00	10.5	6.08	5.03
24	4.21	4.56	3.77	3.16	2.24	2.44	2.47	2.19	3.77	*	9.99	5.84
25	4.22	4.51	3.61	3.05	2.16	2.46	2.55	2.17	4.43	9.55	5.85	4.98
26	4.27	4.46	3.50	2.96	4.05	2.46	2.59	2.25	10.1	9.11	5.84	5.00
27	4.32	4.44	3.49	2.89	2.85	2.49	2.39	2.40	10.9	8.94	5.83	5.04
28	4.37	4.39	3.36	3.08	2.76	2.49	2.35	2.45	9.06	8.81	5.71	5.09
29	4.39		3.39	3.19	2.68	4.37	2.37	*	2.42	6.69	8.66	5.70
30	4.31		3.38	3.09	2.97	4.74	2.38	2.39	4.09	8.47	5.68	4.92
31	4.30		3.38		3.16		2.36	4.09		8.39		4.91
Sum	139.60	121.15	97.18	80.09	100.00	89.88	72.65	130.29	845.27	205.36	164.01	
Current Year 2003 Period 1967-2003												
Extreme Gage Meters				Extreme-Cubic Meters per Second				Volume-Thousand Cubic Meters				
Month	High	Low	Day	High	Day	Low	Average	Total	Average	Maximum	Minimum	
Jan.	0.580	0.560	11	4.84	24	4.16	4.50	12,061	14,578	36,067	8,714	
Feb.	.580	.555	22	4.88	18	4.04	4.33	10,467	13,418	31,348	7,452	
Mar.	.565	.530	2	4.46	28	3.30	3.81	10,214	13,501	27,290	8,331	
April	.540	.510	18	3.72	27	2.83	3.24	8,396	14,708	64,098	7,956	
May	.600	.475	26	5.48	18	1.98	2.58	6,920	17,915	56,812	5,182	
June	1.015	.485	13	46.5	19	2.35	3.33	8,640	16,329	56,469	5,200	
July	.555	.485	7	4.34	27	2.27	2.90	7,766	17,511	94,844	4,767	
Aug.	.615	.475	31	6.18	19	1.98	2.34	6,277	19,856	199,892	4,747	
Sept.	.810	.490	26	18.6	13	2.32	4.34	11,257	45,922	992,293	4,479	
Oct.	3.910	.570	11	721	8	4.43	27.3	73,031	25,877	140,507	6,198	
Nov.	.675	.595	1	8.41	29	5.61	6.85	17,743	17,629	73,681	6,979	
Dec.	.600	.580	11	5.68	30	4.81	5.29	14,170	15,418	46,697	8,187	
Yearly	3.910	0.475		721		1.98	5.93	186,942	232,662	1,341,805	103,647	

* Discharge measurement(s) made on this day ! And other days

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

08-4474.20 DEADMANS CANYON NEAR COMSTOCK, TEXAS

To determine storm runoff previously included with flows measured on the Pecos River at a gaging station which was relocated upstream due to completion of Amistad Dam, a gaging station was established at Deadmans Canyon in 1968.

DESCRIPTION: Cableway, control weir, bubbler gage, DCP with GOES high data rate telemetry, water-stage recorder (graphic and digital), located on the left bank of the canyon at latitude 29°47'05", longitude 101°19'25", 3.7 kilometers upstream from its confluence with the Pecos River, which is 15.3 kilometers upstream from the Pecos River confluence with the Rio Grande. The zero of the gage is 359.05 meters above mean sea level, U. S. C. & G. S. datum.
RECORDS: Based on current-meter measurements, a continuous record of gage heights and the weir discharge rating. Records

RECORDS: Based on current-meter measurements, a continuous record of gage heights, and the weir discharge rating. Records available: March 1968 through 2003.

REMARKS: This stream is normally dry, its flow being confined to periods of storm runoff from its 228 square kilometers of

watershed area. Only the days of flow are shown below.
EXTREME FLOWS FROM RECORDS: Momentary: Max. 1,070 CMS on September 17, 1974, with a gage height of 3.90 meters. Maximum volumes: Monthly. 35.973 TCM in September 1974; yearly. 37.654 TCM in 1974.

Volumes: Monthly, 35,973 TCM in September 1974; yearly, 37,654 TCM in 1974.
 Average Flow in Cubic Meters per Second
 Daily: Max. 166 Sept. 18, 1974 Min.
 Monthly: Max. 13.9 Sept. 1974 Min. see REMARKS
 Yearly: Max. 1.20 1974 Min.

Mean Daily Discharge in CMS 2003				Annual Summary				
Month and Day				Month	Maximum Gage and Discharge			Thousands Cubic Meters
		Day	Meters		CMS			
Jun. 11	0.14	Oct. 11	5.57	Jun.	11	0.500	5.40	40.6
12	0.33			Oct.	11	0.850	41.2	481
				Yearly		0.850	41.2	522

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

08-4494.00 DEVILS RIVER AT PAFFORD CROSSING NEAR COMSTOCK, TEXAS

DESCRIPTION: Concrete control wall with rectangular notch opening of 25.5 CMS capacity, cableway, bubbler gage, DCP with GOES high data rate telemetry, water-stage recorders (graphic & digital), located on the left bank at latitude 29° 40' 35", longitude 101° 00' 00", about 18.5 kilometers east of Comstock, Val Verde County, Texas, and 41.0 river kilometers upstream from its confluence with the Rio Grande. The confluence is located at river kilometer 925, 1.1 river kilometer upstream from Amistad Dam. The zero of the gage is 345.00 meters above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 33 current-meter measurements during the year, 24 by the United States Section and 9 by the Mexican Section of the Commission, a stable rating curve based on current-meter measurements, and a continuous record of gage heights. Records available: 1960 through 2003. Records are also available from May 1900 through March 1914 for a station 38.3 river kilometers downstream; from December 1923 through September 1932 for a station 36.7 river kilometers downstream; from September 2, 1932 through August 1957 for a station 33.8 river kilometers downstream; from August 7, 1954 through January 1958 for a station 8.7 river kilometers upstream; and from August 1954 through May 31, 1968 for a station at the mouth 39.8 river kilometers downstream.

REMARKS: At this station the flow of this spring-fed stream is very uniform during periods of dry weather and is not modified by diversions or storage.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 7,080 CMS on September 18, 1974 with a gage height of 6.04 meters. Min. 1.38 CMS on August 20, 1969.

Average Flow in Cubic Meters per Second											
Daily:	Max.	3,480	Sept. 18, 1974						Min.	1.52	August 20, 1969
Monthly:	Max.	240	Sept.	1974					Min.	1.82	August 1964
Yearly:	Max.	27.7		1974					Min.	2.83	1968

MEAN DAILY DISCHARGE IN CUBIC METERS PER SECOND 2003 --- ANNUAL AND PERIOD SUMMARY												
Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	8.54	7.85	7.26	6.42	6.38	6.16	5.04	4.55	13.4	6.25	11.3	* 8.87
2	8.49	7.94	7.23	6.48	6.31	* 5.95	4.97	4.60	11.0	6.24	11.2	8.77
3	8.51	* 7.99	* 7.07	6.58	6.18	5.88	4.77	4.63	9.00	6.11	* 10.9	8.72
4	8.44	7.86	6.94	6.73	6.10	5.79	5.11	* 4.50	8.31	6.06	10.9	8.49
5	8.47	7.85	6.95	6.64	* 6.16	5.75	5.10	4.52	8.18	6.14	10.7	8.30
6	* 8.49	8.02	6.81	6.76	6.01	5.56	7.93	4.55	8.51	* 6.10	10.5	8.27
7	8.44	7.86	* 6.79	* 6.75	5.97	5.48	* 8.99	4.53	8.09	5.94	10.4	8.28
8	8.49	8.01	6.88	6.40	5.84	5.41	6.85	* 4.54	* 7.59	7.49	10.2	8.27
9	8.49	8.09	7.00	6.61	5.71	5.31	6.30	4.52	7.24	15.8	10.2	8.21
10	8.37	8.06	6.99	6.76	5.75	6.02	5.99	4.54	7.09	* 11.1	10.1	8.06
11	8.37	8.03	6.89	6.78	5.64	5.81	5.85	4.73	7.22	291	9.96	8.10
12	8.51	8.09	7.00	7.01	5.55	5.91	5.70	4.59	7.05	322	9.98	* 8.19
13	8.42	8.21	6.99	7.09	5.57	5.92	5.48	5.01	6.37	46.3	9.76	8.14
14	8.26	* 8.34	6.82	7.06	5.56	5.92	5.36	5.61	7.66	23.8	* 9.63	8.12
15	8.26	8.10	6.82	6.61	5.49	6.34	5.36	5.49	7.39	19.7	9.72	* 8.21
16	8.29	7.75	6.83	6.89	5.37	* 6.75	5.52	5.10	6.63	17.9	9.84	8.06
17	* 8.22	7.64	* 6.73	6.86	5.41	6.18	5.56	4.96	6.29	16.5	* 9.93	8.13
18	8.15	7.80	6.41	6.77	5.42	5.83	5.58	* 4.84	6.20	15.5	9.66	8.27
19	8.10	7.88	6.30	6.66	* 5.51	5.64	5.35	4.68	6.29	14.7	9.31	8.27
20	8.15	7.79	6.40	6.46	5.33	5.48	5.27	4.60	6.40	* 13.8	9.22	8.32
21	8.07	8.20	6.44	* 6.25	5.41	5.29	* 5.27	4.52	6.32	13.2	9.16	8.41
22	7.99	8.13	7.45	6.31	5.48	5.21	5.21	4.45	* 6.25	12.8	9.18	8.56
23	7.90	7.75	6.74	6.39	5.55	5.18	5.16	4.44	6.14	12.5	9.01	8.51
24	7.82	7.40	6.50	6.32	5.59	4.98	5.12	4.53	5.99	12.1	8.78	8.52
25	7.98	7.30	6.45	* 6.04	5.58	4.81	* 5.00	4.88	6.09	11.8	8.84	8.65
26	8.05	7.34	6.27	5.99	6.41	4.79	4.84	4.88	7.32	11.4	8.99	8.86
27	7.99	7.29	6.34	5.94	7.96	* 5.15	4.81	4.62	7.05	11.5	8.84	8.92
28	7.98	7.23	6.16	6.13	7.11	4.91	4.78	4.44	6.96	11.3	8.70	8.96
29	8.00		6.21	6.38	6.22	4.75	4.78	4.37	6.60	11.3	8.80	8.88
30	7.83		6.40	6.44	* 6.27	4.80	4.79	13.6	6.34	11.1	8.87	8.94
31	7.89		6.40		6.31		4.69	27.7		11.2		8.92
Sum		219.80		196.51		166.96		177.52		988.63		262.18
	254.96		208.47		183.15		170.53		220.97		292.58	
Current Year 2003												
Period 1960-2003												
Extreme Gage Meters		Extreme-Cubic Meters per Second				Volume-Thousand Cubic Meters						
Month	High	Low	Day	High	Day	Average	Total	Average	Maximum	Minimum		
Jan.	0.655	0.635	12	8.76	130	7.68	8.22	22,029	19,837	35,576	5,732	
Feb.	.645	.615	21	8.54	24	7.08	7.85	18,991	18,293	52,636	4,933	
Mar.	.630	.580	22	7.90	28	5.55	6.72	18,012	17,865	41,204	5,163	
April	.615	.585	14	7.33	27	5.85	6.55	16,978	17,683	47,831	5,575	
May	.665	.565	27	10.4	20	5.15	5.91	15,824	19,406	49,101	5,572	
June	.610	.560	16	7.13	27	4.69	5.57	14,425	21,442	67,011	5,253	
July	.785	.560	7	17.9	31	4.58	5.50	14,734	25,936	230,071	4,976	
Aug.	1.180	.550	30	111	30	4.20	5.73	15,338	45,095	504,380	4,878	
Sept.	.775	.595	1	17.6	25	5.89	7.37	19,092	47,619	621,065	6,167	
Oct.	1.965	.595	11	859	8	5.81	31.9	85,418	37,575	272,093	6,172	
Nov.	.720	.655	1	11.5	28	8.54	9.75	25,279	23,695	105,909	5,590	
Dec.	.660	.645	28	9.20	16	7.89	8.46	22,652	20,754	38,316	5,794	
Yearly	1.965	0.550		859		4.20	9.16	288,772	315,200	872,184	89,420	

* Discharge measurement(s) made on this day ! And other days

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

08-4494.40 BIG SATAN CREEK NEAR COMSTOCK, TEXAS

To determine storm runoff previously included with flows measured on the Devils River at a gaging station which was re-located upstream due to completion of Amistad Dam, a gaging station was established at Big Satan Creek in 1968.

DESCRIPTION: Cableway, control weir, bubbler gage, DCP with GOES high data rate telemetry, water stage recorders (graphic and digital) located on the right bank of the creek at latitude 29° 39'50", longitude 100° 57'50", 1.8 kilometers upstream from its confluence with the Devils River, which is 34.1 kilometers upstream from the Devils River confluence with the Rio Grande. The zero of the gage is 345.64 meters above mean sea level, U. S. C. & G. S. datum.

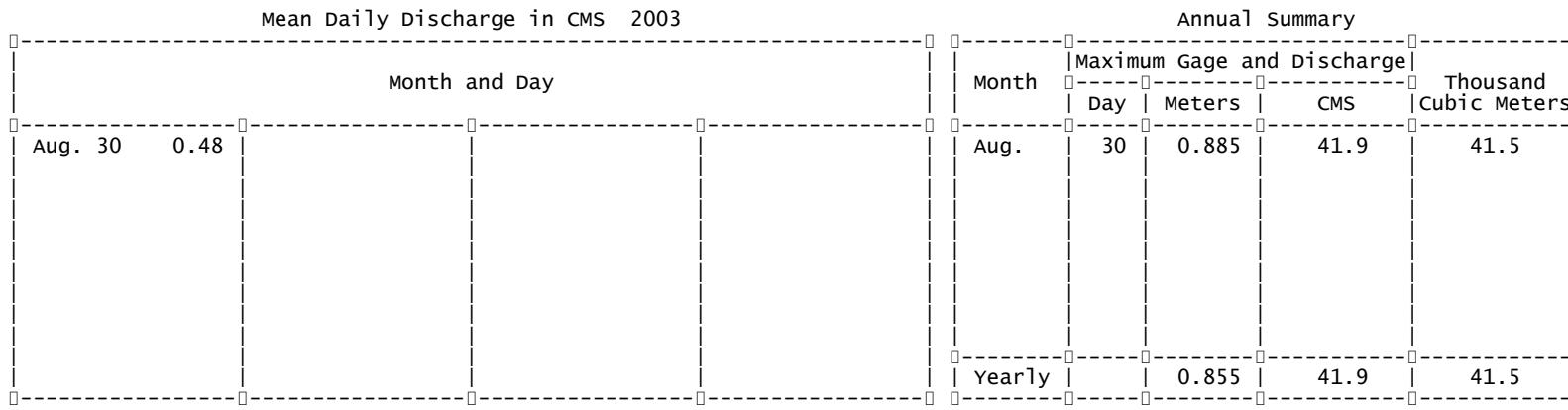
RECORDS: Based on current-meter measurements, a continuous record of gage heights, and the weir discharge rating. Records available: May 1968 through 2003.

REMARKS: This creek is normally dry, its flow being confined to periods of storm runoff from its 109 square kilometers of watershed area. Only the days of flow are shown below.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 2,280 CMS on August 23, 1998, with a gage height of 4.420 meters. Maximum volumes: Monthly, 30,502 TCM in August 1998; yearly, 30,502 TCM in 1998.

Average Flow in Cubic Meters per Second

Daily:	Max.	249	Aug. 23, 1998	Min.	
Monthly:	Max.	11.4	Aug. 1998	Min.	see REMARKS
Yearly:	Max.	0.97	1998	Min.	



08-4494.80 ROUGH CANYON NEAR DEL RIO, TEXAS

To determine storm runoff previously included with flows measured on the Devils River at a gaging station which was re-located upstream due to completion of Amistad Dam, a gaging station was established at Rough Canyon in 1968.

DESCRIPTION: Cableway, control weir, bubbler gage, DCP with GOES high data rate telemetry, water-stage recorders (graphic and digital), located on the right bank at latitude 29° 34'40", longitude 100° 56'00", 6.3 kilometers upstream from its confluence with the Devils River, which is 17.9 kilometers upstream from the Devils River confluence with the Rio Grande. The zero of the gage is 314.12 meters above mean sea level, U. S. C. & G. S. datum.

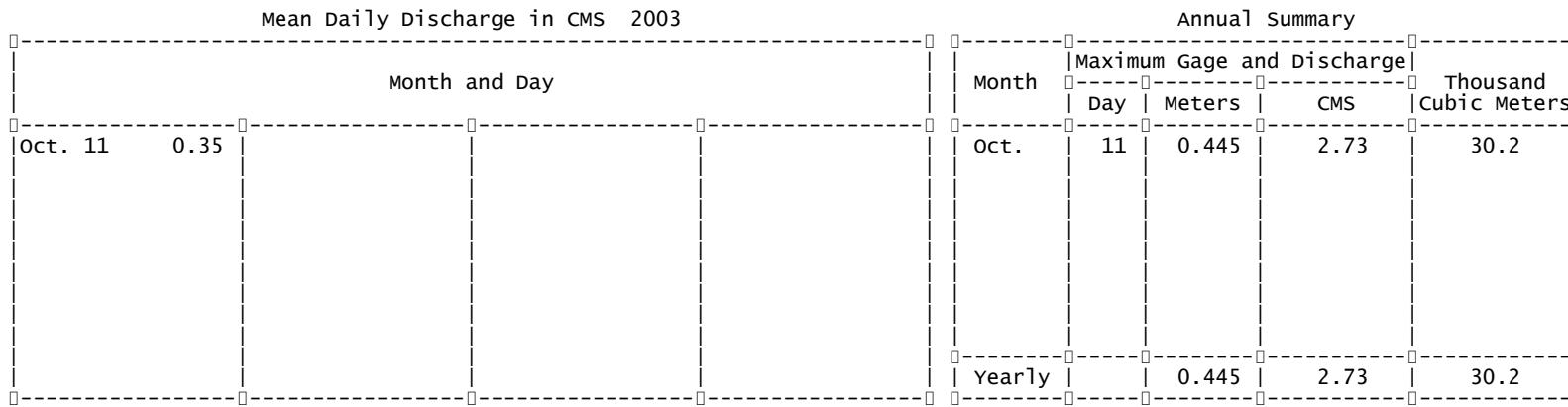
RECORDS: Based on current-meter measurements, a continuous record of gage heights, and the weir discharge rating. Records available: January 1968 through 2003.

REMARKS: This stream is normally dry, its flow being confined to periods of storm runoff from its 62.2 square kilometers of watershed area. Only the days of flow are shown below.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 438 CMS on August 24, 1998, with a gage height of 2.870 meters. Maximum volumes: Monthly, 11,697 TCM in August 1998; yearly, 11,697 TCM in 1998.

Average Flow in Cubic Meters per Second

Daily:	81.9	Aug. 24, 1998	Min.	
Monthly:	4.37	Aug. 1998	Min.	see REMARKS
Yearly:	0.37	1998	Min.	



WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

08-4494.85 NORTH FORK SAN PEDRO CREEK NEAR DEL RIO, TEXAS

To determine storm runoff previously included with flows measured on the Devils River at a gaging station which was re-located upstream due to completion of Amistad Dam, a gaging station was established at the north fork of San Pedro Creek in 1968.

DESCRIPTION: Cableway, control weir, bubbler gage, DCP with GOES high data rate telemetry, water-stage recorders (graphic and digital), located on the right bank of the creek at latitude 29°31'20", longitude 100°53'00", 4.8 kilometers upstream from its confluence with the Middle Fork Branch, which is 10.1 kilometers upstream from its confluence with Devils River which itself is 7.2 river kilometers above Devils River confluence with the Rio Grande. The zero of the gage is 343.49 meters above mean sea level, U. S. C. & G. S. datum.

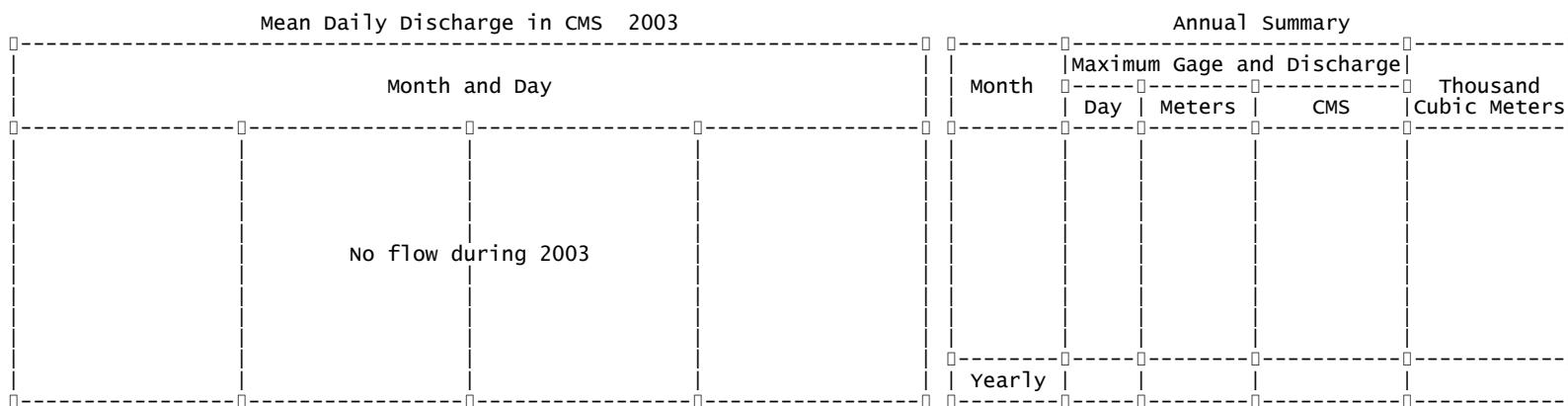
RECORDS: Based on current-meter measurements, a continuous record of gage heights, and the weir discharge rating. Records available: January 1968 through 2003.

REMARKS: This creek is normally dry, its flow being confined to periods of storm runoff from its 44 square kilometers of watershed area. Only the days of flow are shown below.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 253 CMS on August 23 & 24, 1998, with a gage height of 3.750 meters. Maximum volumes: Monthly, 10,670 TCM in August 1998; yearly, 10,670 TCM in 1998.

Average Flow in Cubic Meters per Second

Daily:	Max.	67.1	Aug. 23, 1998	Min.		
Monthly:	Max.	3.98	Aug. 1998	Min.		see REMARKS
Yearly:	Max.	0.34	1998	Min.		



08-4494.90 MIDDLE FORK SAN PEDRO CREEK NEAR DEL RIO, TEXAS

To determine storm runoff previously included with flows measured on the Devils River at a gaging station which was re-located upstream due to completion of Amistad Dam, a gaging station was established at the middle fork of San Pedro Creek in 1968.

DESCRIPTION: Cableway, control weir, bubbler gage, DCP with GOES high data rate telemetry, water-stage recorders (graphic and digital), located on the right bank of the creek at latitude 29°29'30", longitude 100°52'50", 5.1 kilometers upstream from its confluence with the North Fork Branch, which is 10.1 kilometers above the confluence with Devils River, which itself is 7.2 river kilometer above the Devils River confluence with the Rio Grande. The zero of the gage is 346.56 meters above mean sea level, U. S. C. & G. S. datum.

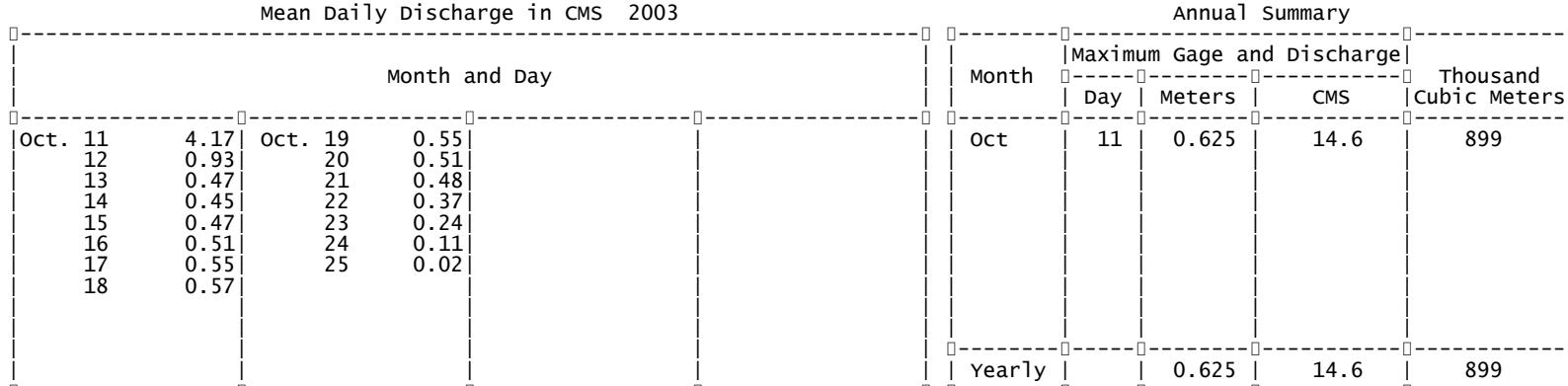
RECORDS: Based on current-meter measurements, a continuous record of gage heights, and the weir discharge rating. Records available: December 1967 through 2003.

REMARKS: This creek is normally dry, its flow being confined to periods of storm runoff from its 31 square kilometers of watershed area. Only the days of flow are shown below.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 1,560 CMS on August 23, 1998, with a gage height of 3.425 meters. Maximum volumes: Monthly, 18,121 TCM in August 1998; yearly, 18,121 TCM in 1998.

Average Flow in Cubic Meters per Second

Daily:	Max.	96.8	Aug. 23, 1998	Min.		
Monthly:	Max.	6.77	Aug. 1998	Min.		see REMARKS
Yearly:	Max.	0.57	1998	Min.		



WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

08-4495.90 EVANS CREEK NEAR COMSTOCK, TEXAS

To determine storm runoff previously included with flows measured on the Devils River at a gaging station which was re-located upstream due to completion of Amistad Dam, a gaging station was established at Evans Creek in 1968.

DESCRIPTION: Cableway, control weir, bubbler gage, DCP with GOES high data rate telemetry, water-stage recorder (graphic and digital), located on the left bank of the creek at latitude 29° 32' 15", longitude 101° 06' 10", 17.7 kilometers upstream from its confluence with the Devils River, which is 5.1 kilometers upstream from the Devils River confluence with the Rio Grande. The zero of the gage is 354.34 meters above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on current-meter measurements, a continuous record of gage heights, and the weir discharge rating. Records available: December 1967 through 2003.

REMARKS: This creek is normally dry, its flow being confined to periods of storm runoff from its 192 square kilometers of watershed area. Only the days of flow are shown below.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 714 CMS on August 23, 1998, with a gage height of 2.180 meters. Maximum volumes: Monthly, 23,342 TCM in August 1998; yearly, 23,342 TCM in 1998.

Average Flow in Cubic Meters per Second

Daily:	212	Aug. 23, 1998	Min.		
Monthly:	8.71	Aug. 1998	Min.	see REMARKS	
Yearly:	0.74	1998	Min.		

Mean Daily Discharge in CMS 2003				Annual Summary			
Month and Day				Month	Day	Maximum Gage and Discharge	Thousands Cubic Meters
Jul.	Oct.	Day	Meters	Jul.	Day	CMS	Cubic Meters
6	11	5.89			7	0.435	4.17
7	12	3.14			11	0.635	780
				Yearly		0.635	803

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

08-4508.05 CARMINA SPRINGS NEAR CD. ACUNA, COAHUILA

DESCRIPTION: Cipolletti weir of 2.00 CMS capacity and staff gage located on a creek about 40 meters upstream from its confluence with the Rio Grande, at latitude 29° 26' 37", longitude 101° 03' 27", and about 17.7 kilometers northwest of Cd. Acuna, Coahuila. This creek enters the Rio Grande from Mexico at river kilometer 923, 0.4 river kilometer downstream from Amistad Dam and 20.3 river kilometers upstream from the international highway bridge between Del Rio, Texas and Cd. Acuna, Coahuila. The elevation of the zero of the gage has not been determined.

RECORDS: Based on a continuous record of gage heights and the weir rating table. Records available: 1969 through 2003.

REMARKS: At least 104 separate springs have emerged on the watershed of this small creek since operation of Amistad Dam began in May 1968. Prior to this time, flow in this creek was exclusively from storm runoff. All storm water from surface runoff passing this station is deducted and is not included in the tabulation below. On September 24, 1971, a flood destroyed part of the weir.

MEAN DAILY DISCHARGE IN CUBIC METERS PER SECOND 2003 --- ANNUAL AND PERIOD SUMMARY												
Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.64	0.69	0.75	0.73	0.72	0.62	0.63	0.75	0.73	0.75	0.85	0.92
2	.64	.69	.73	.73	.71	.62	.66	.75	.73	.75	.85	.92
3	.64	.69	.73	.73	.71	.62	.66	.75	.74	.75	.85	.92
4	.64	.69	.73	.74	.71	.64	.66	.75	.75	.75	.85	.90
5	.66	.69	.71	.74	.71	.64	.66	.75	.75	.75	.91	.90
6	.66	.68	.69	.75	.71	.64	.66	.75	.75	.75	.92	.90
7	.66	.68	.69	.75	.71	.63	.66	.74	.75	.75	.92	.90
8	.66	.68	.68	.75	.70	.63	.66	.73	.75	.75	.92	.90
9	.66	.67	.66	.75	.69	.62	.68	.73	.75	.75	.92	.90
10	.66	.66	.66	.74	.68	.62	.69	.73	.75	.75	.92	.90
11	.66	.66	.66	.73	.66	.63	.69	.73	.75	.76	.92	.90
12	.66	.66	.69	.73	.66	.63	.69	.73	.75	.80	.92	.90
13	.66	.66	.69	.73	.66	.64	.69	.74	.74	.82	.90	.90
14	.66	.66	.69	.71	.66	.64	.69	.75	.74	.82	.90	.90
15	.66	.69	.69	.71	.66	.64	.69	.75	.75	.84	.90	.90
16	.66	.71	.69	.72	.66	.64	.70	.75	.75	.85	.90	.90
17	.66	.71	.69	.73	.66	.64	.71	.75	.75	.85	.90	.90
18	.66	.71	.69	.72	.66	.64	.71	.74	.75	.85	.90	.90
19	.66	.73	.69	.73	.66	.64	.71	.73	.75	.85	.90	.90
20	.66	.73	.69	.73	.66	.64	.71	.73	.75	.85	.90	.90
21	.66	.73	.69	.73	.66	.64	.71	.73	.75	.85	.90	.90
22	.67	.74	.69	.73	.66	.64	.73	.73	.75	.87	.90	.90
23	.67	.75	.69	.73	.66	.64	.73	.73	.75	.87	.90	.90
24	.67	.75	.69	.73	.66	.64	.73	.73	.75	.86	.90	.90
25	.67	.75	.69	.73	.64	.64	.73	.73	.75	.85	.90	.90
26	.67	.75	.71	.73	.64	.64	.73	.73	.75	.85	.90	.90
27	.67	.75	.72	.73	.63	.64	.73	.73	.75	.85	.90	.90
28	.67	.73	.71	.73	.62	.64	.73	.73	.75	.85	.91	.90
29	.67	.71	.71	.73	.62	.63	.73	.73	.75	.85	.92	.90
30	.69	.71	.71	.73	.62	.63	.75	.73	.75	.85	.92	.90
31	.69	.73	.73	.73	.62	.63	.75	.73	.75	.85	.90	.90
Sum	20.52	19.69	21.95	20.68	19.04	21.66	22.86	22.43	25.19	27.00	27.96	
Current Year 2003 Period 1969-2003												
Extreme Gage Meters			Extreme-Cubic Meters per Second			Volume-Thousand Cubic Meters						
Month	High	Low	Day	High	Low	Average	Total	Average	Maximum	Minimum		
Jan.	0.225	0.215	129	0.69	11	0.64	0.66	1,773	3,314	5,155	449	
Feb.	.240	.220	123	.75	10	.66	.70	1,701	3,009	4,603	460	
Mar.	.240	.220	1	.75	8	.66	.70	1,870	3,288	5,046	648	
April	.240	.230	14	.75	14	.71	.73	1,896	3,108	4,512	776	
May	.235	.210	1	.73	27	.62	.67	1,787	3,090	4,604	874	
June	.215	.210	4	.64	1	.62	.63	1,645	2,930	4,411	738	
July	.240	.210	30	.75	1	.62	.70	1,871	3,004	4,553	658	
Aug.	.240	.235	1	.75	7	.73	.74	1,975	3,056	4,460	666	
Sept.	.240	.235	3	.75	1	.73	.75	1,938	3,034	4,199	731	
Oct.	.265	.240	122	.87	11	.75	.81	2,176	3,299	4,750	1,024	
Nov.	.275	.265	6	.92	1	.85	.90	2,333	3,231	4,701	1,189	
Dec.	.275	.270	11	.92	4	.90	.90	2,416	3,370	5,019	1,329	
Yearly	0.275	0.210	1	0.92	1	0.62	0.74	23,381	37,733	53,373	11,201	

! And other days

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

LOURDES AND HILDA SPRINGS NEAR CD. ACUNA, COAHUILA

08-4508.20 LOURDES SPRING

DESCRIPTION: Rectangular sharp-crested weir of 0.82 CMS capacity and staff gage located at latitude 29° 26'35", longitude 101° 03'30", at the base of the high bank of the Rio Grande, and about 17.9 kilometers northwest of Cd. Acuna, Coahuila. This creek enters the Rio Grande from Mexico at river kilometer 922, 19.6 river kilometers upstream from the international highway bridge between Del Rio, Texas and Cd. Acuna, Coahuila. The zero of the gage is 282.33 meters above mean sea level U. S. C. & G. S. datum.

RECORDS: Based on periodic staff gage readings and the weir discharge table. Mean daily discharges determined by prorating between readings. Records available: 1969 through 2003.

REMARKS: This spring emerged since operation of Amistad Dam began in May 1968. All storm water from surface runoff passing this station is deducted.

Month	Current Year 2003						Period 1969-2003			
	Extreme Gage Meters		Extreme-Cubic Meters per Second			Total	Volume-Thousand Cubic Meters		Average	Maximum
	High	Low	@ High Day	@ Low Day	Average		Average	Average		
Jan.	0.080	0.075	! 1	0.04	! 1	0.04	107	143	199	107
Feb.	.080	.080	! 1	.04	! 1	.04	96.8	130	228	96.8
Mar.	.080	.075	! 1	.04	! 1	.04	107	144	258	107
April	.080	.075	! 1	.04	! 1	.04	104	139	171	95.0
May	.080	.070	! 1	.04	! 22	.03	98.5	139	176	80.4
June	.075	.070	! 18	.04	! 1	.03	89.0	134	181	77.8
July	.080	.075	! 1	.04	! 1	.04	107	138	187	55.3
Aug.	.080	.080	! 1	.04	! 1	.04	107	140	187	53.6
Sept.	.080	.080	! 1	.04	! 1	.04	104	135	181	36.3
Oct.	.080	.080	! 1	.04	! 1	.04	107	140	187	26.8
Nov.	.080	.080	! 1	.04	! 1	.04	104	135	181	20.7
Dec.	.085	.080	! 21	.05	! 1	.04	117	137	187	0
Yearly	0.085	0.070		0.05		0.04	1,248	1,654	2,085	793

@ Mean daily ! And other days

08-4508.30 HILDA SPRING

DESCRIPTION: Rectangular sharp-crested weir of 1.50 CMS capacity and staff gage located on a creek about 100 meters upstream from its confluence with the Rio Grande, at latitude 29° 26'20", longitude 101° 03'35", and about 17.7 kilometer northwest of Cd. Acuna, Coahuila. This creek enters the Rio Grande from Mexico at river kilometer 922, 19.0 kilometer upstream from the international highway bridge between Del Rio, Texas and Cd. Acuna, Coahuila. The zero of the gage is 276.80 meters above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on periodic staff gage readings and the weir discharge table. Mean daily discharges determined by prorating between readings. Records available: 1969 through 2003.

REMARKS: This spring emerged since operation of Amistad Dam began in May 1968. All storm water from surface runoff passing this station is deducted.

Month	Current Year 2003						Period 1969-2003			
	Extreme Gage Meters		Extreme-Cubic Meters per Second			Total	Volume-Thousand Cubic Meters		Average	Maximum
	High	Low	@ High Day	@ Low Day	Average		Average	Average		
Jan.	0.025	0.025	! 1	0.01	! 1	0.01	0.01	26.8	165	321
Feb.	.025	.025	! 1	.01	! 1	.01	.01	24.1	147	290
Mar.	.030	.025	! 1	.01	! 1	.01	.01	26.8	157	297
April	.030	.025	! 1	.01	! 1	.01	.01	26.0	147	278
May	.025	.025	! 1	.01	! 1	.01	.01	26.8	148	268
June	.030	.025	! 1	.01	! 1	.01	.01	26.0	139	259
July	.030	.030	! 1	.01	! 1	.01	.01	26.8	140	285
Aug.	.035	.030	! 19	.02	! 1	.01	.01	38.0	138	295
Sept.	.035	.030	! 1	.02	! 18	.01	.02	40.6	138	289
Oct.	.030	.030	! 1	.01	! 1	.01	.01	26.8	152	299
Nov.	.035	.030	! 19	.02	! 1	.01	.01	36.3	152	311
Dec.	.035	.035	! 1	.02	! 1	.02	.02	53.6	160	321
Yearly	0.035	0.025		0.02		0.01	0.01	379	1,783	3,345
@ Mean daily			! And other days							315

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

08-4509.00 RIO GRANDE BELOW AMISTAD DAM NEAR CD. ACUNA, COAHUILA AND DEL RIO, TEXAS

DESCRIPTION: Cableway, gravity well, concrete control weir, and water-stage recorders (graphic and digital), located on the left bank at latitude 29°25'30", longitude 101°02'25", and river kilometer 920, 3.4 river kilometers downstream from Amistad Dam and 17.4 river kilometers upstream from the international highway bridge between Del Rio, Texas and Cd. Acuna, Coahuila. The zero of the gage is 274.00 meters above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 22 current-meter measurements during the year, 12 by the Mexican Section and 10 by the U.S. Section, and a continuous record of gage heights. Computations for high flows by shifting control methods. Low and medium flow computations based on a stable control weir rating curve defined by current-meter measurements. Records available: September 1954 through 2003. Records are also available from May 1900 through April 1915 for a station 3.1 kilometers upstream; from December 1919 through March 1920 for a station 2.7 kilometers downstream near McKee's Switch; from July 2, 1941 through August 1954 and October 1960 through 1967 for a station at the international highway bridge; and from December 1923 through July 2, 1941, and 1968 through 2003 for a station approximately 17.1 kilometers downstream.

REMARKS: Reservoirs, diversions, and drainage returns modify the river flow at this station. On May 31, 1968 Amistad Dam started impounding water. After this day, flow at this station is controlled largely by releases from Amistad Reservoir, 3.4 river kilometers upstream. A computerized radio telemetry system relays gage height data to the Amistad Dam office.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 32,790 CMS on June 28, 1954, determined by slope-area computation, with a gage height of 16.98 meters at the old station site 152 meters downstream. This is the greatest rate of discharge recorded at any point on the Rio Grande. Max. since Amistad Dam, 1,760 CMS on Sept. 21, 1974. Min. 0.63 CMS on February 14, 1969, with a gage height of 0.33 meters.

Average Flow in Cubic Meters per Second**

Daily: Max. 1,730	Sept. 23, 1974	Min. 1.32	August 13, 1998
Monthly: Max. 609	Sept. 1974	Min. 1.72	October 1971
Yearly: Max. 140	1974	Min. 16.2	1972

MEAN DAILY DISCHARGE IN CUBIC METERS PER SECOND 2003 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	13.0	13.3	13.3	13.3	101	23.0	11.6	13.8	18.6	12.7	13.3	12.7
2	13.0	13.3	13.3	13.8	99.7	24.2	11.6	13.8	19.3	13.3	13.3	13.3
3	13.0	13.0	13.3	14.0	99.8	23.0	12.1	21.1	19.3	13.3	13.3	13.3
4	13.0	13.0	13.3	14.0	103	24.4	13.3	30.1	19.3	13.3	13.8	13.3
5	13.0	13.3	13.3	15.6	100	23.4	13.3	30.0	20.0	13.3	14.0	13.3
6	13.0	13.3	13.3	13.8	99.9	23.8	14.4	30.8	19.3	13.8	13.8	13.3
7	13.0	13.3	13.3	13.8	102	23.5	13.8	29.1	19.3	14.4	13.3	13.3
8	* 13.0	13.3	13.0	13.3	103	23.8	13.8	31.7	20.0	14.4	13.3	13.3
9	13.0	13.3	13.0	13.3	100	23.2	13.3	31.5	20.0	13.8	13.3	13.3
10	12.7	13.0	13.0	13.3	100	24.3	13.8	31.3	* 20.7	10.7	12.7	13.3
11	12.7	13.0	13.3	13.3	103	* 23.1	13.3	30.7	20.7	10.8	12.7	13.3
12	13.3	13.0	* 13.3	13.3	102	23.1	13.3	31.8	15.4	8.06	13.6	13.3
13	13.3	13.0	13.3	13.8	102	23.4	13.3	23.3	10.0	7.62	12.7	13.3
14	13.3	13.0	13.3	23.0	103 *	23.0	13.3	27.0	10.0	6.30	12.7	13.3
15	13.3	13.0	13.3	31.3	104	24.8	13.3	27.8	13.0	* 5.90	12.7	13.3
16	13.3	13.0	13.3	30.9	104	23.1	13.8	27.0	12.7	5.90	12.7	13.8
17	13.3	13.3	13.3	31.4	103	24.3	* 13.8	27.0	13.8	* 5.90	12.7	13.3
18	13.3	13.3	13.3	31.9	103	25.2	13.8	28.6	12.7	5.90	12.7	13.3
19	13.3	* 13.3	13.3	31.6	106	23.8	13.8	31.6	* 13.3	5.90	* 12.7	13.3
20	13.3	13.3	* 13.3	31.1	104	23.1	13.8	32.6	12.7	5.90	13.1	13.3
21	13.3	13.3	13.3	31.7	106	22.9	13.8	* 30.2	12.7	5.90	* 13.4	13.3
22	13.0	13.3	13.8	31.0	105 *	18.0	13.8	32.4	12.7	* 5.90	12.7	13.3
23	* 12.7	13.3	13.3	* 31.8	106	18.0	13.8	28.5	12.7	8.99	12.7	13.3
24	12.7	13.3	13.8	31.7	108	13.8	13.8	30.2	12.7	11.6	12.7	* 13.3
25	12.7	13.3	13.8	32.1	31.9	11.9	13.8	30.6	13.1	12.1	12.7	13.3
26	12.7	* 13.3	13.3	31.7	25.5	12.1	13.8	30.8	13.5	12.1	12.7	13.3
27	12.7	13.3	13.3	96.2	26.8	12.1	13.8	* 32.5	12.7	12.7	12.7	13.8
28	12.7	13.3	13.3	102	26.8	12.0	13.8	31.8	12.7	13.3	12.7	13.3
29	13.3	13.3	13.3	79.7	22.2	11.8	13.8	31.2	12.7	13.8	12.7	13.3
30	13.3	13.3	110 *	24.1	11.6	13.8	23.8	12.7	13.8	12.7	13.3	13.3
31	13.3	13.3	13.3	23.5			13.8	17.8		13.8		13.3
Sum	404.5	369.7	967.7	2,648.2	617.7	418.3	870.4	458.3	325.17	390.1	412.7	

Current Year 2003

Period 1968-2003

Month	Extreme Gage Meters		Extreme-Cubic Meters per Second		Average		Volume-Thousand Cubic Meters		
	High	Low	Day	Day	Day	Total	Average	Maximum	Minimum
Jan.	0.235	0.220	12	13.8	29	12.1	13.0	34,949	105,552
Feb.	.230	.225	! 1	13.3	! 3	12.7	13.2	31,942	138,151
Mar.	.240	.225	28	14.4	15	12.7	13.3	35,675	170,813
April	.910	.080	30	181	! 21	1.51	32.3	83,609	193,657
May	.845	.085	21	156	29	1.64	85.4	228,804	268,498
June	.480	.085	8	53.0	18	1.51	20.6	53,369	196,157
July	.265	.210	6	17.4	2	11.0	13.5	36,141	161,940
Aug.	.645	.060	10	93.9	31	.81	28.1	75,203	178,460
Sept.	.330	.195	11	26.2	13	9.50	15.3	39,597	203,271
Oct.	.325	.145	11	25.4	15	5.14	10.5	28,095	184,493
Nov.	.300	.220	5	21.9	! 18	12.1	13.0	33,705	109,070
Dec.	.280	.225	16	19.3	! 1	12.7	13.3	35,657	95,897
Yearly	0.910	0.060		181		0.81	22.7	716,746	2,005,959
									14,398,694
									514,104

* Discharge measurement(s) made on this day

! And other days

** Period 1968-2003

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

08-4509.04 SPRING M-15 NEAR CD. ACUNA, COAHUILA

DESCRIPTION: Rectangular sharp-crested weir of 0.23 CMS capacity and staff gage located at latitude 29° 25' 20", longitude 101° 02' 40", about 0.4 kilometer upstream from its confluence with the Rio Grande and about 15.1 kilometers northwest of Cd. Acuna, Coahuila. This creek enters the Rio Grande from Mexico at river kilometer 919, 16.5 river kilometers upstream from the international highway bridge between Del Rio, Texas, and Cd. Acuna, Coahuila. The zero of the gage is 281.98 meters above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on periodic staff gage readings and the weir discharge table. Mean daily discharges determined by prorating between readings. Records available: 1969 through 2003.
REMARKS: This spring emerged since operation of Amistad Dam began in May 1968. All storm water from surface runoff passes

REMARKS: This spring emerged since operation of Amistad Dam began in May 1968. All storm water from surface runoff passing this station is deducted and is not included in the tabulation below.

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

08-4509.05 ARROYO DE LOS JABONCILLOS NEAR CD. ACUNA, COAHUILA

DESCRIPTION: Cipolletti weir of 2.00 CMS capacity and staff gage located at latitude 29° 24'25", longitude 101° 02'20", about 200 meters upstream from its confluence with the Rio Grande, and about 13.8 kilometers northwest of Cd. Acuna, Coahuila. This creek enters the Rio Grande from Mexico at river kilometer 918, 15.3 river kilometers upstream from the international highway bridge between Del Rio, Texas and Cd. Acuna, Coahuila. The elevation of the zero of the gage has not been determined.

RECORDS: Based on periodic staff gage readings during the year. Mean daily discharge determined by prorating between readings. Records available: 1969 through 2003.

REMARKS: At least 70 separate springs have emerged along this creek since operation of Amistad Dam began in May 1968. Prior to this time, flow in this creek was exclusively from storm runoff. All storm water from surface runoff passing this station is deducted and is not included in the tabulation below.

MEAN DAILY DISCHARGE IN CUBIC METERS PER SECOND 2003 --- ANNUAL AND PERIOD SUMMARY												
Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.38	0.43	0.45	0.44	0.38	0.35	0.31	0.41	0.42	0.44	0.65	0.67
2	.41	.43	.46	.44	.38	.34	.31	.41	.42	.45	.66	.67
3	.41	.43	.46	.44	.38	.32	.32	.41	.42	.45	.66	.67
4	.41	.44	.46	.43	.38	.31	.33	.41	.42	.46	.67	.67
5	.41	.44	.46	.43	.38	.31	.34	.41	.42	.47	.67	.66
6	.42	.44	.46	.42	.38	.31	.35	.41	.42	.48	.67	.66
7	.42	.44	.47	.42	.38	.31	.36	.41	.41	.48	.67	.65
8	.42	.44	.47	.41	.38	.31	.37	.41	.41	.49	.67	.65
9	.42	.44	.48	.41	.38	.31	.38	.41	.41	.50	.67	.64
10	.42	.44	.48	.41	.38	.31	.38	.41	.41	.50	.67	.64
11	.42	.44	.49	.42	.38	.31	.39	.41	.41	.51	.67	.64
12	.41	.44	.49	.42	.38	.31	.39	.41	.42	.52	.67	.64
13	.41	.44	.49	.43	.38	.31	.40	.41	.42	.53	.67	.64
14	.41	.44	.48	.43	.38	.31	.40	.41	.43	.53	.67	.64
15	.41	.44	.48	.44	.38	.31	.40	.41	.43	.54	.67	.64
16	.41	.45	.48	.44	.37	.31	.41	.41	.44	.55	.67	.64
17	.41	.45	.47	.44	.37	.31	.41	.40	.44	.55	.67	.64
18	.41	.45	.47	.43	.37	.31	.40	.40	.44	.56	.67	.64
19	.41	.45	.46	.43	.37	.31	.40	.40	.44	.57	.67	.65
20	.41	.45	.46	.43	.36	.31	.40	.40	.44	.58	.67	.65
21	.41	.45	.46	.43	.36	.31	.39	.40	.44	.58	.67	.66
22	.41	.45	.45	.42	.36	.31	.38	.40	.44	.59	.67	.66
23	.41	.45	.45	.42	.36	.31	.38	.40	.44	.60	.67	.67
24	.41	.45	.45	.41	.37	.31	.38	.41	.44	.60	.67	.67
25	.41	.45	.44	.41	.37	.31	.39	.41	.44	.61	.67	.67
26	.42	.45	.44	.40	.37	.31	.39	.41	.44	.62	.67	.67
27	.42	.45	.44	.40	.37	.31	.40	.41	.44	.63	.67	.67
28	.42	.45	.44	.39	.38	.31	.40	.41	.44	.63	.67	.67
29	.42	.44	.39	.38	.31	.41	.41	.44	.44	.64	.67	.67
30	.42	.44	.38	.38	.31	.41	.41	.41	.44	.64	.67	.67
31	.42	.44	.37	.37	.41	.41	.41	.42	.42	.65	.67	.67
Sum	12.80	12.42	12.61	11.61	9.38	11.79	12.65	12.87	16.95	20.06	20.35	
Current Year 2003 Period 1969-2003												
Extreme Gage Meters				Extreme-Cubic Meters per Second				Volume-Thousand Cubic Meters				
Month	High	Low	Day	High	Day	Low	Average	Total	Average	Maximum	Minimum	
Jan.	0.235	0.230	18	0.42	1	0.38	0.41	1,106	3,529	5,822	431	
Feb.	.245	.245	28	.45	1	.43	.44	1,073	3,211	5,189	470	
Mar.	.260	.240	112	.49	126	.44	.46	1,236	3,481	5,642	649	
April	.240	.220	11	.44	30	.38	.42	1,090	3,254	5,359	785	
May	.220	.210	11	.38	20	.36	.37	1,003	3,229	5,600	792	
June	.205	.190	1	.35	4	.31	.31	810	2,988	5,021	715	
July	.230	.190	116	.41	1	.31	.38	1,019	2,995	5,387	631	
Aug.	.235	.225	31	.42	21	.40	.41	1,093	2,960	5,330	625	
Sept.	.240	.230	117	.44	10	.41	.43	1,112	3,050	5,448	600	
Oct.	.315	.240	31	.65	1	.44	.55	1,464	3,371	6,428	684	
Nov.	.320	.310	5	.67	1	.65	.67	1,733	3,394	5,979	685	
Dec.	.320	.310	11	.67	10	.64	.66	1,758	3,534	5,808	749	
Yearly	0.320	0.190		0.67		0.31	0.46	14,497	38,996	63,943	9,381	

! And other days

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

08-4509.06 SPRING M-5 NEAR CD. ACUNA, COAHUILA

DESCRIPTION: Rectangular sharp-crested weir of 0.50 CMS capacity and staff gage located at latitude 29° 25' 20", longitude 101° 02' 35", at the base of the high bank of the Rio Grande, and about 14.8 kilometers northwest of Cd. Acuna, Coahuila. This creek enters the Rio Grande from Mexico at river kilometer 919, 16.2 river kilometers upstream from the international highway bridge between Del Rio, Texas and Cd. Acuna, Coahuila. The zero of the gage is 284.19 meters above mean sea level U. S. C. & G. S. datum.

RECORDS: Based on periodic staff gage readings and the weir discharge table. Mean daily discharges determined by prorating between readings. Records available: 1969 through 2003.

REMARKS: This spring emerged since operation of Amistad Dam began in May 1968. All storm water from surface runoff passing this station is deducted and is not included in the tabulation below.

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

08-4509.10 ARROYO DEL BUEY NEAR CD. ACUNA, COAHUILA

DESCRIPTION: Cipolletti weir of 1.00 CMS capacity, located at latitude 29° 24'20", longitude 101° 02'25", 0.3 kilometer upstream from its confluence with the Rio Grande, and about 13.7 kilometers northwest of Cd. Acuna, Coahuila. This creek enters the Rio Grande from Mexico at river kilometer 918, 5.6 river kilometers downstream from Amistad Dam and 15.1 kilometers upstream from the international highway bridge between Del Rio, Texas and Cd. Acuna, Coahuila. The elevation of the zero of the gage has not been determined.

RECORDS: Based on periodic staff gage readings and the weir discharge table. Mean daily discharges determined by prorating between readings. Records available: November 1961 through 2003.

REMARKS: The flow of this stream is not modified by diversions or storage. Prior to 1969 discharges were based on a continuous record of gage heights and the weir discharge table. Storm flow is deducted and not included in the tabulation below. This station was established for investigational purposes in connection with Amistad Dam to determine what effect storage in Amistad Reservoir will have on the flow of this stream. At approximately 0.5 creek kilometer upstream from the weir, four springs have emerged since Amistad Reservoir storage began. Backwater from the Rio Grande will affect the flow of this stream when the flow in the river is approximately 566 CMS.

MEAN DAILY DISCHARGE IN CUBIC METERS PER SECOND 2003 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.17	0.17	0.18	0.18	0.18	0.19	0.18	0.20	0.20	0.21	0.20	0.19
2	.17	.17	.18	.18	.18	.19	.18	.20	.20	.21	.20	.19
3	.17	.17	.18	.18	.18	.19	.18	.20	.20	.21	.20	.19
4	.17	.17	.18	.18	.18	.19	.18	.20	.20	.21	.20	.19
5	.17	.17	.18	.18	.18	.19	.18	.20	.20	.21	.20	.19
6	.17	.17	.18	.18	.18	.19	.18	.20	.20	.21	.20	.19
7	.17	.17	.18	.18	.18	.19	.18	.20	.20	.21	.20	.19
8	.17	.17	.18	.18	.18	.19	.18	.20	.20	.21	.20	.19
9	.17	.17	.18	.18	.18	.19	.18	.20	.20	.21	.20	.19
10	.17	.17	.18	.18	.18	.19	.18	.20	.20	.21	.20	.19
11	.17	.17	.18	.18	.18	.19	.19	.20	.20	.21	.20	.19
12	.17	.17	.18	.18	.18	.19	.19	.20	.20	.21	.20	.19
13	.17	.17	.18	.18	.18	.19	.19	.20	.20	.21	.20	.19
14	.17	.17	.18	.18	.18	.19	.19	.20	.20	.21	.20	.19
15	.17	.17	.18	.18	.18	.19	.19	.20	.20	.21	.20	.19
16	.17	.17	.18	.18	.18	.19	.19	.20	.20	.21	.20	.19
17	.17	.17	.18	.18	.18	.19	.19	.20	.20	.21	.20	.19
18	.17	.17	.18	.18	.18	.19	.19	.20	.21	.21	.20	.19
19	.17	.17	.18	.18	.18	.18	.19	.20	.21	.21	.20	.19
20	.17	.18	.18	.18	.18	.18	.19	.20	.21	.20	.19	.19
21	.17	.18	.18	.18	.19	.18	.19	.20	.21	.20	.19	.19
22	.17	.18	.18	.18	.19	.18	.19	.20	.21	.20	.19	.19
23	.17	.18	.18	.18	.19	.18	.19	.20	.21	.20	.19	.19
24	.17	.18	.18	.18	.19	.18	.19	.20	.21	.20	.19	.19
25	.17	.18	.18	.18	.19	.18	.19	.20	.21	.20	.19	.19
26	.17	.18	.18	.18	.19	.18	.19	.20	.21	.20	.19	.19
27	.17	.18	.18	.18	.19	.18	.20	.20	.21	.20	.19	.19
28	.17	.18	.18	.18	.19	.18	.20	.20	.21	.20	.19	.19
29	.17		.18	.18	.19	.18	.20	.20	.21	.20	.19	.19
30	.17		.18	.18	.19	.18	.20	.20	.21	.20	.19	.19
31	.17		.18		.19		.20	.20		.20		.19
Sum	5.27	4.85	5.52	5.40	5.60	5.58	5.64	6.20	6.12	6.39	5.20	5.89

Current Year 2003

Period 1961-2003

Month	Extreme Gage Meters			Extreme-Cubic Meters per Second			Volume-Thousand Cubic Meters			Period 1961-2005		
	@ High		@ Low	Average		Total	Average		Maximum	Minimum		
	High	Low	Day	Day			Average					
Jan.	0.205	0.205	! 1	0.17	! 1	0.17	0.17	455	441	651	8.4	
Feb.	.210	.205	! 20	.18	! 1	.17	.17	419	404	624	6.7	
Mar.	.210	.210	! 1	.18	! 1	.18	.18	482	439	725	11.5	
April	.210	.210	! 1	.18	! 1	.18	.18	467	453	937	7.8	
May	.220	.210	! 21	.19	! 1	.18	.18	492	483	1,092	13.4	
June	.220	.210	! 1	.19	! 19	.18	.19	482	433	664	7.8	
July	.225	.210	! 27	.20	! 1	.18	.19	505	426	657	8.0	
Aug.	.225	.225	! 1	.20	! 1	.20	.20	536	444	653	8.3	
Sept.	.230	.225	! 18	.21	! 1	.20	.20	530	455	648	8.1	
Oct.	.230	.225	! 1	.21	! 20	.19	.21	552	478	671	8.0	
Nov.	.225	.220	! 1	.20	! 20	.19	.20	509	442	638	7.8	
Dec.	.220	.215	! 1	.19	! 1	.19	.19	509	448	664	8.0	
Yearly	0.230	0.205		0.21		0.17	0.19	5,938	5,346	7,674	268	
@ Mean daily			! And other days									

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

08-4511.20 MARIS SPRING NEAR CD. ACUNA, COAHUILA

DESCRIPTION: Cipolletti weir of 3.00 CMS capacity and staff gage located at the spring about 30 meters from the right bank of the Rio Grande at latitude 29° 24'00", longitude 101° 01'55", and about 12.9 kilometers northwest of Cd. Acuna, Coahuila. This spring enters the Rio Grande from Mexico at river kilometer 917, 14.3 river kilometers upstream from the international highway bridge between Del Rio, Texas and Cd. Acuna, Coahuila and 6.4 river kilometers downstream from Amistad Dam. The elevation of the zero of the gage has not been determined.

RECORDS: Based on periodic staff gage readings and the weir discharge table. Mean daily discharges determined by prorating between readings. Records available: November 14, 1961 through February 1984 and September 1985 through 2003.

REMARKS: The flow of this spring is very uniform during periods of dry weather and is not modified by diversions or storage. This station was established for investigational purposes in connection with Amistad Dam to determine what effect storage in Amistad Reservoir may have on the flow of this spring. All storm water from surface runoff passing this station is deducted and is not included in the tabulation below. Prior to May 1969 the weir had a 0.32 CMS capacity. Beginning March 1, 1984, discharge computations were temporarily discontinued due to leakage under the weir. Discharge computations were resumed on August 14, 1985.

MEAN DAILY DISCHARGE IN CUBIC METERS PER SECOND 2003 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.26	0.26	0.26	0.39	0.29
2	.24	.24	.24	.24	.24	.24	.24	.26	.26	.26	.38	.29
3	.24	.24	.24	.24	.24	.24	.24	.26	.26	.26	.36	.29
4	.24	.24	.24	.24	.24	.24	.24	.26	.26	.26	.35	.29
5	.24	.24	.24	.24	.24	.24	.24	.26	.26	.26	.34	.29
6	.24	.24	.24	.24	.24	.24	.24	.26	.26	.26	.34	.29
7	.24	.24	.24	.24	.24	.24	.24	.26	.26	.26	.33	.29
8	.24	.24	.24	.24	.24	.25	.24	.26	.26	.26	.33	.29
9	.24	.24	.24	.24	.24	.25	.24	.26	.26	.27	.32	.29
10	.24	.24	.24	.24	.24	.25	.25	.26	.26	.28	.32	.29
11	.24	.24	.24	.24	.24	.25	.26	.26	.26	.29	.31	.29
12	.24	.24	.24	.24	.24	.25	.27	.26	.26	.29	.31	.29
13	.24	.24	.24	.24	.24	.25	.28	.26	.26	.30	.31	.29
14	.24	.24	.24	.24	.24	.25	.29	.26	.26	.31	.30	.28
15	.24	.24	.24	.24	.24	.25	.30	.26	.26	.32	.30	.28
16	.24	.24	.24	.24	.24	.25	.31	.26	.26	.33	.30	.28
17	.24	.24	.24	.24	.24	.25	.32	.26	.26	.34	.30	.28
18	.24	.24	.24	.24	.24	.25	.31	.26	.26	.35	.29	.28
19	.24	.24	.24	.24	.24	.25	.31	.26	.26	.35	.29	.27
20	.24	.24	.24	.24	.24	.25	.30	.26	.26	.36	.29	.27
21	.24	.24	.24	.24	.24	.25	.29	.26	.26	.37	.29	.27
22	.24	.24	.24	.24	.24	.24	.29	.26	.26	.38	.29	.27
23	.24	.24	.24	.24	.24	.24	.28	.26	.26	.39	.29	.26
24	.24	.24	.24	.24	.24	.24	.28	.26	.26	.40	.29	.26
25	.24	.24	.24	.24	.24	.24	.27	.26	.26	.41	.29	.26
26	.24	.24	.24	.24	.24	.24	.27	.26	.26	.41	.29	.26
27	.24	.24	.24	.24	.24	.24	.27	.26	.26	.42	.29	.26
28	.24	.24	.24	.24	.24	.24	.27	.26	.26	.43	.29	.26
29	.24	.24	.24	.24	.24	.24	.26	.26	.26	.43	.29	.26
30	.24	.24	.24	.24	.24	.24	.26	.26	.26	.42	.29	.26
31	.24	.24	.24	.24	.24	.24	.26	.26	.26	.40	.26	.26
Sum	6.72	7.20	7.34	8.06	10.33	8.59						

Current Year 2003

Period 1961-2003

Month	Extreme Gage Meters			Extreme-Cubic Meters per Second			Volume-Thousand Cubic Meters				
	@ High		@ Low		Average	Total	Average	Maximum	Minimum		
	High	Low	Day	Day							
Jan.	0.060	0.055	!29	0.24	! 8	0.24	0.24	643	691	1,152	5.4
Feb.	.065	.060	!19	.24	! 1	.24	.24	581	619	1,136	5.0
Mar.	.060	.060	! 1	.24	! 1	.24	.24	643	680	1,179	7.0
April	.060	.060	! 1	.24	! 1	.24	.24	622	681	1,217	10.4
May	.055	.045	! 1	.24	!11	.24	.24	643	736	1,624	10.7
June	.075	.050	!18	.25	! 4	.24	.24	634	713	1,719	7.4
July	.150	.060	17	.32	! 1	.24	.27	722	733	1,693	9.8
Aug.	.090	.090	! 1	.26	! 1	.26	.26	696	747	1,524	7.6
Sept.	.100	.085	!17	.26	! 1	.26	.26	674	760	1,434	13.3
Oct.	.210	.100	29	.43	!10	.26	.33	893	822	1,752	13.4
Nov.	.185	.130	! 1	.39	!19	.29	.31	809	760	1,650	12.7
Dec.	.130	.100	! 1	.29	!24	.26	.28	742	716	1,464	10.7
Yearly	0.210	0.045		0.43		0.24	0.26	8,302	8,658	16,058	74.3
@ Mean daily		And other days									

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

08-4511.30 EIGHT MILE CREEK NEAR DEL RIO, TEXAS

DESCRIPTION: Concrete wall with 90 V-notch weir of 0.20 CMS capacity at latitude 29°24'00", longitude 101°00'55", 1.3 creek kilometers upstream from its confluence with the Rio Grande, and about 12.9 kilometers northwest of Del Rio, Val Verde County, Texas. This stream enters the Rio Grande from the United States at river kilometer 916, 7.4 river kilometers downstream from Amistad Dam and 13.4 kilometers upstream from the international highway bridge between Del Rio, Texas and Cd. Acuna, Coahuila. The elevation of the zero of the gage is 278.58 meters above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 12 current-meter measurements or observations of no flow during the year. Mean daily discharges determined by prorating between measurements. Records available: March 1961 through 2003.

REMARKS: The source of flow of this stream is from surface runoff during rainy periods and the subsequent flow from underground seepage as a result of such rains. All storm water from surface runoff passing this station is deducted and is not included in the tabulation below. This station was established for investigational purposes in connection with Amistad Dam to determine what effect storage in Amistad Reservoir may have on the flow of this stream. Bubbler gage and water-stage recorder were removed April 1, 1985.

EXTREME FLOWS FROM RECORDS:

			Average Flow in Cubic Meters per Second	Min. 0	Occasionally
Daily:	Max.	0.45	July 23 & 24, 1976	Min. 0	Occasionally
Monthly:	Max.	0.18	July 1976	Min. 0	Occasionally
Yearly:	Max.	0.11	1974 & 1975	Min. 0	Several years

MEAN DAILY DISCHARGE IN CUBIC METERS PER SECOND 2003 --- ANNUAL AND PERIOD SUMMARY												
Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0
21	0	0	0	0	0	0	0	0	0	0	0	0
22	0	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0	0	0	0	0	0
25	0	0	0	0	0	0	0	0	0	0	0	0
26	0	0	0	0	0	0	0	0	0	0	0	0
27	0	0	0	0	0	0	0	0	0	0	0	0
28	0	0	0	0	0	0	0	0	0	0	0	0
29	0	0	0	0	0	0	0	0	0	0	0	0
30	0	0	0	0	0	0	0	0	0	0	0	0
31	0	0	0	0	0	0	0	0	0	0	0	0
Sum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Current Year 2003												
Period 1961-2003												
Extreme Gage Meters				Extreme-Cubic Meters per Second				Volume-Thousand Cubic Meters				
Month	High	Low	Day	@ High	Day	@ Low	Day	Average	Total	Average	Maximum	Minimum
Jan.			1	0	1	0	1	0	0	118	363	0
Feb.			1	0	1	0	1	0	0	110	396	0
Mar.			1	0	1	0	1	0	0	115	386	0
April			1	0	1	0	1	0	0	106	313	0
May			1	0	1	0	1	0	0	107	412	0
June			1	0	1	0	1	0	0	92.0	264	0
July			1	0	1	0	1	0	0	92.0	481	0
Aug.			1	0	1	0	1	0	0	89.7	369	0
Sept.			1	0	1	0	1	0	0	89.1	296	0
Oct.			1	0	1	0	1	0	0	100	412	0
Nov.			1	0	1	0	1	0	0	101	396	0
Dec.			1	0	1	0	1	0	0	107	349	0
Yearly			0	0	0	0	0	0	0	1,227	3,567	0

* Discharge measurement(s) made on this day @ Mean daily ! And other days

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

08-4511.40 MCKEE SPRING NEAR DEL RIO, TEXAS

DESCRIPTION: This spring is located on the left floodplain of the Rio Grande at latitude 29° 23'35", longitude 101° 01'15", about 46 meters from the edge of the low-flow channel and about 12.9 kilometers northwest of Del Rio, Texas. Water from this spring enters the Rio Grande from the United States at river kilometer 916, 7.7 river kilometers downstream from Amistad Dam.

RECORDS: Based on 12 current-meter measurements during the year. Mean daily discharges determined by prorating between measurements. Records available: November 1961 through 2003.

REMARKS: The flow of this spring is uniform during periods of dry weather and is modified by periodic residential pumping. It is estimated that backwater from the Rio Grande will reach the emergence of this spring when the river flow is approximately 396 CMS. This station was established for investigational purposes in connection with Amistad Dam to determine what effect storage in Amistad Reservoir may have on the flow of this spring.

EXTREME FLOWS FROM RECORDS:

		Average Flow in Cubic Meters per Second											
Daily:	Max.	0.31	Feb. 16, 1983									Min. 0	Occasionally
Monthly:	Max.	0.26	Feb. 1983									Min. 0	Occasionally
Yearly	Max.	0.22	1979									Min. 0	1963

MEAN DAILY DISCHARGE IN CUBIC METERS PER SECOND 2003 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.07	0.06	0.02	0.04	0.05	0.08	0.07	0.06	0.05	0.04	0.06	0.04
2	.07	.06	.02	* .04	.05	.08	* .07	.06	.05	.04	.06	.04
3	.07	* .06	* .02	.04	.05	.08	.07	* .06	* .05	.04	* .06	* .04
4	.07	.06	.02	.04	.05	* .08	.07	* .06	.05	.04	.06	.04
5	.07	.06	.02	.04	* .05	.08	.07	.06	.05	.04	.06	.04
6	*	.07	.06	.02	.04	.05	.08	.07	.06	.05	* .04	.06
7	.07	.06	.02	.04	.05	.08	.07	.06	.05	.04	.06	.04
8	.07	.05	.02	.04	.05	.08	.07	.06	.05	.04	.06	.05
9	.07	.05	.02	.04	.05	.08	.07	.06	.05	.04	.06	.05
10	.07	.05	.02	.04	.06	.08	.07	.06	.05	.04	.06	.05
11	.07	.05	.03	.04	.06	.08	.07	.06	.05	* .04	.06	.04
12	.07	.05	.03	.04	.06	.08	.07	.06	.05	.04	.05	.05
13	.07	.05	.03	.04	.06	.08	.07	.06	.05	.04	.05	.05
14	.07	.05	.03	.04	.06	.08	.07	.06	.05	.04	.05	.05
15	.07	.04	.03	.04	.06	.08	.07	.06	.05	.04	.05	.05
16	.07	.04	.03	.04	.06	.08	.07	.06	.05	.04	.05	.06
17	.07	.04	.03	.04	.06	.08	.07	.06	.05	.04	.05	.06
18	.07	.04	.03	.04	.06	.08	.07	.06	.05	.04	.05	.06
19	.07	.04	.03	.05	.06	.07	.06	.06	.05	.04	.05	.06
20	.07	.04	.03	.05	.07	.07	.06	.05	.04	.05	.05	.06
21	.07	.04	.03	.05	.07	.07	.06	.05	.04	.05	.05	.06
22	.06	.03	.03	.05	.07	.07	.06	.05	.04	.05	.05	.06
23	.06	.03	.03	.05	.07	.07	.06	.05	.04	.05	.05	.06
24	.06	.03	.03	.05	.07	.07	.06	.05	.04	.05	.05	.07
25	.06	.03	.03	.05	.07	.07	.06	.05	.04	.05	.05	.07
26	.06	.03	.04	.05	.07	.07	.06	.05	.04	.05	.04	.07
27	.06	.03	.04	.05	.07	.07	.06	.05	.04	.06	.04	.07
28	.06	.03	.04	.05	.07	.07	.06	.05	.04	.06	.04	.07
29	.06	.04	.05	.05	.07	.07	.06	.05	.04	.06	.04	.07
30	.06	.04	.05	.05	.08	.07	.06	.05	.04	.06	.04	.07
31	.06	.04	.05	.05	.08	.08	.06	.05	.04	.06	.04	.07
Sum	2.07	1.26	1.32	1.91	2.28	2.04	1.74	1.39	1.48	1.55	1.72	

Current Year 2003

Period 1961-2003

Month	Extreme Gage Meters		Extreme-Cubic Meters per Second			Average	Total	Volume-Thousand Cubic Meters		
	High	Low	@ High Day	@ Low Day	Average			Average	Maximum	Minimum
Jan.			1 0.07	122	0.06	0.07	179	309	649	0
Feb.			1 .06	122	.03	.05	109	291	628	0
Mar.			126	0.04	1 0.02	.03	76.9	314	650	0
April			19	.05	1 0.04	.04	114	307	604	0
May			130	.08	1 0.05	.06	165	329	633	.7
June			1 0.08	19	.07	.08	197	302	580	0
July			1 0.07	19	.06	.07	176	310	692	0
Aug.			1 0.06	20	.05	.06	150	313	622	0
Sept.			1 0.05	20	.04	.05	120	301	591	0
Oct.			127	.06	1 0.04	.05	128	311	640	0
Nov.			1 0.06	26	.04	.05	134	295	636	0
Dec.			124	.07	1 0.04	.06	149	302	596	0
Yearly			0.08	0.02	0.05	1,698	3,684	6,978	0.71	

* Discharge measurement(s) made on this day @ Mean daily ! And other days

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

08-4511.50 ARROYO DE LA TREINTA Y UNA NEAR CD. ACUNA, COAHUILA

DESCRIPTION: cipolletti weir of 1.00 CMS capacity, located at latitude 29 22'35", longitude 101 01'15", 966 creek meters upstream from its confluence with the Rio Grande, and about 10.5 kilometers northwest of Cd. Acuna, Coahuila. This stream enters the Rio Grande from Mexico at river kilometer 913, 10.1 river kilometers downstream from Amistad Dam and 10.6 river kilometers upstream from the international highway bridge between Del Rio, Texas and Cd. Acuna, Coahuila. The elevation of the zero of the gage has not been determined.

RECORDS: Based on periodic staff gage readings and the weir discharge table. Mean daily discharges determined by prorating between readings. Records available: November 1961 through 2003.

REMARKS: The flow of this stream is very uniform during periods of dry weather and is not modified by diversions or storage. Prior to 1969 discharges were based on a continuous record of gage heights and the weir discharge table. Storm flow is deducted and not included in the tabulation below. This station was established for investigational purposes in connection with Amistad Dam to determine what effect storage in Amistad Reservoir may have on the flow of this stream. It is estimated that backwater from the Rio Grande will affect the flow at this station only during times of extremely high release.

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

08-4513.00 CANTU SPRING NEAR DEL RIO, TEXAS

DESCRIPTION: Concrete enclosure located at the spring source in the channel of a small tributary to Cienegas Creek at latitude 29° 23'15", longitude 100° 56'00", about 4.0 kilometers northwest of Del Rio, Texas and 5.6 creek kilometers upstream from the confluence of Cienegas Creek with the Rio Grande. Cienegas Creek enters the Rio Grande at river kilometer 906, 3.0 river kilometers upstream from the international highway bridge between Del Rio, Texas and Cd. Acuna, Coahuila.

RECORDS: Based on 12 current-meter measurements during the year. Mean daily discharges determined by prorating between measurements. Records available: March 1961 through 2003.

REMARKS: The flow of this spring is very uniform and is not modified by diversions or storage. A weir was installed on May 24, 1961 and removed November 21, 1962. This station was established for investigational purposes in connection with Amistad Dam to determine what effect storage in Amistad Reservoir may have on the flow of this spring.

EXTREME FLOWS FROM RECORDS:

			Average Flow in Cubic Meters per Second											
Daily:	Max.	0.37	March 2, 1989									Min. 0	Occasionally	
Monthly:	Max.	0.34	March 1989									Min. 0	Occasionally	
Yearly:	Max.	0.24	1989									Min. 0	1963	

MEAN DAILY DISCHARGE IN CUBIC METERS PER SECOND 2003 --- ANNUAL AND PERIOD SUMMARY												
Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.16	0.16	0.19	0.14	0.13	0.16	0.12	0.13	0.12	0.12	0.14	0.13
2	.16	.16	.19	* .14	.13	.16	* .12	.13	.12	.12	.14	.13
3	.16	* .16	* .19	.14	.13	.16	.12	* .13	* .12	.12	* .14	* .13
4	.16	.16	.19	.14	.13	* .16	.12	* .13	.12	.12	.14	.13
5	.16	.16	.19	.14	* .13	.16	.12	.13	.12	.12	.14	.13
6	*	.16	.16	.18	.14	.13	.16	.12	.13	* .12	.14	.13
7	.16	.16	.18	.14	.13	.16	.12	.13	.12	.12	.14	.13
8	.16	.16	.18	.14	.13	.15	.12	.13	.12	.12	.14	.13
9	.16	.17	.18	.14	.13	.15	.12	.13	.12	.12	.14	.13
10	.16	.17	.18	.14	.13	.15	.12	.13	.12	.12	.14	.13
11	.16	.17	.18	.14	.15	.16	.12	.13	.12	.12	.14	.13
12	.16	.17	.17	.14	.15	.16	.12	.13	.12	.12	.14	.13
13	.16	.17	.17	.14	.15	.16	.12	.13	.12	.12	.14	.13
14	.16	.17	.17	.14	.15	.16	.12	.13	.12	.13	.14	.13
15	.16	.17	.17	.14	.15	.16	.12	.13	.12	.13	.14	.13
16	.16	.17	.17	.14	.15	.16	.12	.13	.12	.13	.14	.13
17	.16	.17	.17	.14	.15	.16	.12	.13	.12	.13	.14	.13
18	.16	.18	.16	.14	.15	.16	.12	.13	.12	.13	.14	.13
19	.16	.18	.16	.14	.15	.16	.12	.13	.12	.13	.13	.13
20	.16	.18	.16	.13	.15	.16	.13	.12	.12	.13	.13	.13
21	.16	.18	.16	.13	.15	.16	.14	.13	.12	.12	.13	.13
22	.16	.18	.16	.13	.15	.16	.13	.12	.12	.13	.13	.13
23	.16	.18	.16	.13	.15	.16	.13	.12	.12	.13	.13	.13
24	.16	.18	.15	.13	.15	.16	.13	.12	.12	.13	.13	.13
25	.16	.18	.15	.13	.15	.16	.13	.12	.12	.13	.13	.13
26	.16	.18	.15	.13	.15	.16	.13	.12	.12	.13	.13	.13
27	.16	.18	.15	.13	.15	.16	.13	.12	.12	.13	.14	.13
28	.16	.19	.15	.13	.15	.16	.13	.12	.12	.14	.13	.13
29	.16	.15	.15	.13	.15	.16	.12	.13	.12	.12	.14	.13
30	.16	.14	.15	.13	.15	.16	.12	.13	.12	.12	.14	.13
31	.16	.14	.14	.13	.16	.16	.13	.12	.12	.14	.13	.13
Sum	4.96	4.80	4.08	4.39	4.30	3.85	3.91	3.60	3.95	4.08	4.03	
Current Year 2003												
Period 1961-2003												
Extreme Gage Meters			Extreme-Cubic Meters per Second			Volume-Thousand Cubic Meters						
Month	High	Low	@ High Day	@ Low Day	Average	Total	Average	Maximum	Minimum			
Jan.			! 1	0.16 ! 1	0.16	429	429	697	0			
Feb.			28	.19 ! 1	.16	415	387	749	0			
Mar.			1	.19 ! 30	.14	448	421	907	0			
April			1	.14 ! 19	.13	353	394	780	0			
May			30	.16 ! 1	.13	379	403	750	0			
June			1	.16 ! 29	.12	372	376	675	0			
July			19	.13 ! 1	.12	333	382	671	0			
Aug.			1	.13 ! 20	.12	338	385	668	0			
Sept.			1	.12 ! 1	.12	311	388	661	0			
Oct.			127	.14 ! 1	.12	341	425	777	0			
Nov.			1	.14 ! 19	.13	353	407	768	0			
Dec.			! 1	.13 ! 1	.13	348	415	734	0			
Yearly			0.19	0.12	0.14	4,420	4,812	8,063	0			

* Discharge measurement(s) made on this day @ Mean daily ! And other days

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

08-4515.00 CIENEGAS CREEK NEAR DEL RIO, TEXAS

DESCRIPTION: Measurement sections, one each, located on Cienegas Creek at latitude 29 21'10", longitude 100 56'35", 0.8 creek kilometer upstream from its confluence with the Rio Grande; and for the Briggs Farm ditch, latitude 29 21'40", longitude 100 56'30", 884 meters downstream from the ditch intake which branches off the right bank of Cienegas Creek immediately upstream of a small diversion dam across the creek, and about 4.0 kilometers west of Del Rio, Val Verde County Texas. The point of diversion is 2.9 creek kilometers upstream from the confluence of Cienegas Creek with the Rio Grande. Cienegas Creek enters the Rio Grande at river kilometer 906, 3.0 river kilometers upstream from the international highway bridge between Del Rio, Texas and Cd. Acuna, Coahuila.

RECORDS: Based on 12 current-meter measurements at Cienegas Creek and 12 current-meter measurements at Briggs Farm ditch, respectively, during the year. Mean daily discharge computations determined by combining the two records for the total yield of the springs. Records available: March 1965 through 2003. Discharge measurement data available since November 1962. Records are also available from September 1931 through June 1935 for a station 0.5 creek kilometer downstream. The station was moved 0.3 creek kilometer upstream in June 1983.

REMARKS: Low flow of this stream is from springs, one of which is Cantu Spring, whose discharge is shown on the previous page. The flow of this stream is modified by irrigation diversions through the Briggs Farm ditch. All storm flow passing this station is deducted and is not included in the tabulation. These stations were established for investigational purposes in connection with Amistad Dam to determine what effect storage in Amistad Reservoir may have on the flow of these springs.

EXTREME FLOWS FROM RECORDS:

			Average Flow in Cubic Meters per Second											
Daily:	Max.	1.21	August 12, 1972						Min.	0.01	April 21, 1966			
Monthly:	Max.	0.70	July 1976						Min.	0.02	August 1967			
Yearly:	Max.	0.51	1977						Min.	0.03	1968			

MEAN DAILY DISCHARGE IN CUBIC METERS PER SECOND 2003 --- ANNUAL AND PERIOD SUMMARY												
Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.35	0.37	0.44	0.27	0.26	0.37	0.28	0.24	0.22	0.29	0.33	0.36
2	.35	.37	.44	* .27	.26	.37	* .28	.24	.22	.29	.33	.36
3	.35	* .37	* .44	.27	.26	.38	.28	* .24	* .22	.29	* .33	* .36
4	.35	.37	.44	.27	.26	* .38	.28	* .24	.22	.30	.33	.36
5	.35	.37	.43	.27	* .26	.38	.28	.24	.22	.30	.33	.36
6	*	.35	.37	.43	.27	.26	.37	.28	.24	.23	* .30	.33
7	.35	.37	.41	.27	.27	.37	.28	.24	.23	.30	.33	.36
8	.35	.38	.41	.27	.27	.36	.27	.24	.23	.30	.34	.36
9	.35	.39	.40	.27	.28	.36	.27	.24	.23	.30	.34	.36
10	.35	.39	.40	.27	.28	.35	.27	.24	.24	.30	.34	.36
11	.35	.39	.40	.27	.28	.36	.27	.24	.24	.30	.34	.36
12	.35	.39	.39	.27	.29	.36	.27	.24	.24	.30	.34	.35
13	.35	.39	.39	.27	.29	.35	.27	.23	.24	.31	.34	.35
14	.35	.39	.38	.27	.30	.35	.27	.23	.25	.31	.34	.35
15	.35	.40	.40	.27	.28	.35	.27	.24	.24	.30	.34	.35
16	.35	.40	.36	.27	.30	.34	.27	.23	.25	.31	.34	.35
17	.35	.40	.36	.27	.31	.33	.27	.23	.25	.31	.34	.35
18	.35	.41	.36	.27	.31	.33	.27	.23	.26	.31	.35	.35
19	.35	.41	.35	.26	.32	.33	.25	.23	.26	.31	.35	.35
20	.35	.41	.35	.26	.32	.32	.25	.23	.26	.31	.35	.36
21	.35	.41	.34	.26	.32	.32	.25	.23	.26	.32	.35	.36
22	.37	.42	.33	.26	.33	.31	.25	.23	.27	.32	.35	.36
23	.37	.42	.32	.26	.33	.31	.25	.23	.27	.32	.35	.36
24	.37	.42	.32	.26	.34	.30	.25	.23	.27	.32	.35	.36
25	.37	.42	.31	.26	.34	.31	.25	.23	.27	.32	.35	.36
26	.37	.42	.31	.26	.34	.31	.25	.23	.28	.32	.35	.36
27	.37	.42	.31	.26	.35	.30	.25	.22	.28	.33	.35	.36
28	.37	.43	.30	.26	.35	.30	.25	.22	.28	.33	.36	.35
29	.37	.30	.26	.36	.29	.25	.22	.22	.28	.33	.36	.35
30	.37	.28	.26	.36	.29	.25	.24	.22	.29	.33	.36	.35
31	.37	.28	.26	.36	.29	.24	.22	.22	.29	.33	.35	.35
Sum	11.05	11.10	11.35	7.98	9.46	10.14	8.16	7.19	7.51	9.62	10.29	11.04
	Current Year 2003											
	Period 1965-2003											
Month	Extreme Gage Meters		Extreme-Cubic Meters per Second			Volume-Thousand Cubic Meters						
	High	Low	@ High Day	@ Low Day	Average	Total	Average	Maximum	Minimum			
Jan.			122	0.37	1 1	0.35	0.36	955	967	1,532	163	
Feb.			28	.43	1 1	.37	.40	959	891	1,512	121	
Mar.			1 1	.44	1 30	.28	.37	981	930	1,563	85.6	
April			1	.27	1 19	.26	.27	689	857	1,388	59.2	
May			129	.36	1 1	.26	.31	817	862	1,430	81.7	
June			3	.38	1 29	.29	.34	876	810	1,322	18.1	
July			1 1	.28	1 30	.24	.26	705	786	1,884	9.3	
Aug.			1 1	.24	1 27	.22	.23	621	782	1,531	8.0	
Sept.			30	.29	1 1	.22	.25	649	786	1,287	16.2	
Oct.			127	.33	1 1	.29	.31	831	895	1,400	19.1	
Nov.			128	.36	1 1	.33	.34	889	886	1,378	31.1	
Dec.			1 1	.36	1 12	.35	.36	954	931	1,441	78.6	
Yearly			0.44	0.22	0.31	0.31	9,926	10,383	15,992	856		

* Discharge measurement(s) made on this day @ Mean daily ! And other days

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

08-4518.00 RIO GRANDE AT DEL RIO, TEXAS AND CD. ACUNA, COAHUILA

DESCRIPTION: Cableway, bubbler gage, concrete control weir, water-stage recorders (graphic and digital), and DCP with GOES high data rate telemetry located on the left bank at latitude 29°20'07", longitude 100°55'41", and river kilometer 903, 360 meters upstream from the international highway bridge between Del Rio, Texas and Cd. Acuna, Coahuila and 20.4 river kilometers downstream from Amistad Dam. The zero of the gage is 264.93 meters above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 30 current-meter measurements during the year, 21 by the United States Section and 9 by the Mexican Section of the Commission, and a continuous record of gage heights. Computations for high flows by shifting control methods. Low and medium flow computations based on a stable control weir rating curve defined by current-meter measurements. Records available: December 1923 through July 2, 1941 and January 1968 through 2003. Records are available from May 1900 through April 1915 for a station 19.6 kilometers upstream; from December 1919 through March 1920 for a station 14.0 kilometers upstream near McKee's Switch; from July 2, 1941 through 1954 and October 1960 through 1967 for a station 366 meters downstream at the international highway bridge; and from September 1954 through the current year for a station, Rio Grande below Amistad Dam, 17.0 kilometers upstream.

REMARKS: Reservoirs, diversions, and drainage returns modify the river flow at this station. Except for tributary inflows and small intervening diversions below Amistad Dam, flow at this station after May 31, 1968 is controlled largely by releases from Amistad Reservoir.

EXTREME FLOWS FROM RECORDS: The greatest recorded flow of 32,300 CMS occurred on June 28, 1954, with a gage height of 11.66 meters at a station 360 meters downstream. The lowest recorded flow was 3.51 CMS which occurred March 5 and 6, 1969, with a gage height of 0.38 meters.

Average Flow in Cubic Meters per Second**

Daily:	Max.	1,810	Sept. 22, 1974	Min.	4.64	Aug. 13, 1971
Monthly:	Max.	632	Sept. 1974	Min.	5.32	October 1971
Yearly:	Max.	146	1974	Min.	19.9	1972

MEAN DAILY DISCHARGE IN CUBIC METERS PER SECOND 2003 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	15.7	15.6	16.4	16.4	109	27.2	13.5	16.1	24.0	16.0	19.3	19.4
2	15.3	15.8	16.3	16.6	111	27.4	* 13.2	16.0	23.3	15.8	19.4	19.5
3	15.6	15.9	16.5	* 16.6	110	27.2	13.9	17.3	23.4	16.3	19.5	* 19.1
4	15.7	* 15.9	* 16.6	16.7	114	26.5	15.2	32.0	* 23.4	16.1	* 20.5	18.8
5	15.8	15.7	16.5	17.5	113	* 24.9	15.3	* 31.4	23.2	16.0	21.4	18.8
6	15.7	15.7	16.3	15.6	113	24.7	18.2	30.8	23.3	16.2	21.5	18.6
7	* 15.9	15.7	* 16.3	15.0	117	24.3	23.9	30.5	22.8	* 17.1	20.9	18.5
8	16.0	15.7	16.3	14.9	116	23.7	16.8	* 32.8	22.8	17.6	20.8	18.5
9	16.1	15.6	16.2	15.2	115	* 23.7	16.5	35.3	23.1	17.2	21.0	18.8
10	16.0	15.5	16.1	15.5	112	23.8	16.7	33.8	23.6	* 15.2	20.9	18.9
11	16.1	15.6	16.1	15.4	117	23.6	16.3	33.2	23.6	34.1	21.0	18.9
12	16.0	15.5	16.0	15.4	117	23.6	16.3	35.5	21.0	25.0	21.8	* 19.2
13	16.1	15.5	15.9	15.3	119	24.4	16.4	27.0	13.5	13.6	21.3	19.2
14	15.9	15.8	15.8	20.9	120	23.5	16.4	26.2	13.9	11.6	* 21.4	19.3
15	15.7	16.2	15.8	* 34.8	124	24.5	* 16.4	28.5	15.7	10.4	21.7	19.1
16	15.6	16.1	15.8	32.8	125	24.4	16.3	29.4	16.0	10.3	21.8	19.5
17	15.5	16.1	15.6	34.4	124	* 25.1	16.2	30.3	17.1	10.3	22.1	* 19.3
18	15.6	16.2	15.1	34.8	122	24.3	16.1	32.3	16.2	10.0	21.7	19.5
19	15.6	16.3	14.5	33.8	124	25.7	16.0	* 36.2	* 16.1	9.79	* 21.7	19.2
20	16.0	16.3	14.7	35.0	123	27.0	15.9	37.9	16.0	* 9.66	21.5	19.0
21	16.4	16.2	14.8	34.9	122	* 27.3	15.8	34.8	16.0	9.76	22.0	19.0
22	16.4	16.3	14.9	35.0	122	19.4	15.8	37.1	15.9	9.87	21.1	18.9
23	16.2	16.3	15.2	35.4	122	19.1	16.3	34.2	15.9	11.8	21.1	18.5
24	16.3	16.2	15.2	35.4	122	16.3	16.5	35.1	15.7	14.8	21.2	18.4
25	16.3	16.0	15.4	* 37.1	49.5	12.6	* 16.5	34.6	15.7	16.8	21.1	18.3
26	16.4	16.1	15.5	36.6	34.5	13.4	16.3	36.0	21.5	17.0	21.0	18.3
27	16.3	16.1	15.6	90.4	47.7	* 13.4	16.2	36.5	16.3	17.5	20.3	18.1
28	15.9	16.3	15.8	112	34.9	13.5	16.2	36.9	15.8	18.6	19.6	17.8
29	15.3		15.9	78.1	30.2	13.3	16.1	35.7	15.9	18.9	19.4	17.9
30	15.2		16.1	124	* 29.5	13.3	16.2	28.8	16.1	19.3	19.2	17.6
31	15.4		16.3		28.6	16.1	24.4		19.2			17.9
Sum	492.0	446.2	1,051.5	3,087.9	661.1	503.5	966.6	566.8	481.78	627.2	581.8	

Current Year 2003

Period 1968-2003

Month	Extreme Gage Meters			Extreme-Cubic Meters per Second			Volume-Thousand Cubic Meters				
	High	Low	Day	High	Low	Average	Total	Average	Maximum	Minimum	
Jan.	0.510	0.495	21	17.1	1.2	14.9	15.9	42,509	111,574	272,866	17,882
Feb.	.505	.495	22	16.5	12	15.2	15.9	38,552	142,514	552,852	22,983
Mar.	.505	.485	3	16.7	18	14.3	15.8	42,293	175,242	489,370	21,337
April	1.015	.430	30	181	17	8.12	35.1	90,850	200,039	566,611	41,748
May	.990	.450	116	175	29	11.3	99.6	266,795	275,214	669,284	38,149
June	.680	.430	19	50.3	8	7.71	22.0	57,119	199,838	512,957	28,546
July	.590	.475	7	31.4	1.1	13.0	16.2	43,502	165,788	452,566	38,823
Aug.	.815	.400	21	92.4	31	5.61	31.2	83,514	185,621	827,137	35,556
Sept.	.620	.475	1	38.3	13	12.9	18.9	48,972	210,964	1,637,441	47,921
Oct.	.805	.440	11	88.6	20	9.29	15.5	41,626	192,281	1,005,540	14,281
Nov.	.530	.495	5	24.9	30	18.9	20.9	54,190	117,039	650,690	16,830
Dec.	.520	.495	16	22.0	128	17.2	18.8	50,268	102,191	282,187	17,168
Yearly	1.015	0.400		181		5.61	27.3	860,190	2,078,305	14,617,893	627,328

* Discharge measurement(s) made on this day ! And other days ** Period 1968-2003

Values for January 1968 are Rio Grande near Del Rio less Arroyo de las Vacas flow

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

08-4520.00 ARROYO DE LAS VACAS AT CD. ACUNA, COAHUILA

DESCRIPTION: Cableway, concrete wall with a V-shape concrete control weir of 10 CMS capacity, gravity well, and water-stage recorder located on the left bank at Cd. Acuna, Coahuila, latitude 29°19'45", longitude 100°57'20" and 2.9 creek kilometers upstream from its confluence with the Rio Grande. This stream enters the Rio Grande at river kilometer 903 on the upstream side of the international highway bridge between Del Rio, Texas and Cd. Acuna, Coahuila and 20.7 river kilometers downstream from Amistad Dam. The zero of the gage is 270.00 meters above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 24 current-meter measurements during the year, 20 by the Mexican Section and 4 by the U.S. Section, and a continuous record of gage heights. Computations by shifting control methods for flows exceeding the capacity of the weir. Records available: Occasional estimates from June 1935 to March 19, 1938 and a continuous record from March 20, 1938 through 2003.

REMARKS: Low flow of this stream is from springs and is modified by irrigation diversions upstream. On June 17, 1961, a flood destroyed the station, leaving the control wall under several feet of silt. The station was reconstructed in September and a V-shape concrete control weir with a capacity of 10 CMS, constructed at this station, started operating December 14, 1961. On June 28, 1954, backwater from the Rio Grande reached an elevation of 275.08 meters at this station. Records prior to 1965 were published under the title "Arroyo Las Vacas near Cd. Acuna, Coahuila."

EXTREME FLOWS FROM RECORDS: Momentary: Max. 1,800 CMS with a gage height of 7.70 meters on June 17, 1961. Min. no flow on several occasions.

Average Flow in Cubic Meters per Second											
Daily:	Max.	678	June 17, 1998					Min.	0	Frequently	
Monthly:	Max.	29.8	June 1961					Min.	0.01	Occasionally	
Yearly:	Max.	2.77	1961					Min.	0.08	1952	

MEAN DAILY DISCHARGE IN CUBIC METERS PER SECOND 2003 --- ANNUAL AND PERIOD SUMMARY												
Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.24	0.26	0.26	0.19	0.12	0.26	0.13	0.14	0.71	0.25	0.25	0.34
2	.23	.32	.26	.19	.11	.24	.12	.14	.32	.25	.25	.27
3	.25	.32	.25	.20	.11	.24	.11	.13	.24	.26	.26	.31
4	.24	.26	.24	.18	.11	.26	.10	.13	1.80	.26	.25	.28
5	.23	.26	.24	.19	.10	.24	.11	.12	.34	.26	.24	.26
6	.23	.25	.24	.18	.10	2.70	* 20.4	.13	.24	.25	.24	.26
7	.31	.25	.24	.19	.10	.46	9.79	*	.12	.24	.23	.26
8	.30	.32	.23	.38	.10	.36	.76	.11	.24	.33	.28	.33
9	.29	.32	.23	.28	.09	.28	.39	.11	.23	.37	.28	.33
10	*	.27	.31	.25	.22	.09	* .29	.10	.21	.30	.28	.37
11	.28	.26	.26	.17	.09	.21	.26	.12	.18	31.3	.30	* .38
12	.33	.26	.26	.15	.09	.19	.26	.14	.20	5.68	.30	.39
13	.31	.30	.26	.14	.09	1.41	.26	.14	.17	1.12	*	.30
14	.28	.26	.26	.14	.09	1.07	.25	.13	.38	.72	.29	.38
15	.26	.26	.24	.14	* .08	.45	.22	.12	.22	.56	.30	.30
16	.26	.24	.26	.14	.08	.33	.78	.11	.20	.49	.30	.25
17	.24	.24	.26	.12	.08	.29	.33	.10	.19	* .44	.30	.23
18	.26	.24	.25	.12	.07	.27	.25	.10	.19	.42	.29	.23
19	.25	.26	.24	.12	.08	.25	.22	.09	* .19	.39	.28	.23
20	.26	* .26	.24	.11	.08	.23	.20	.09	.22	.36	.29	.20
21	.26	.26	.23	.14	.08	.23	.19	.09	.23	.35	*	.28
22	.26	.27	.37	.15	.08	.22	.18	.09	.24	.34	.27	.19
23	.25	.26	.27	.15	.07	.17	.16	.09	.22	.32	.25	.18
24	.29	*	.24	.26	.14	.06	.16	.20	.09	.19	.31	.18
25	.32	.25	.25	.14	.06	.15	.19	.10	7.14	.30	.25	.18
26	.35	.26	.25	.12	.08	* .13	.18	* .11	4.83	.32	.26	.19
27	.35	*	.26	.25	.11	24.8	.13	.18	.09	.45	.30	.22
28	.33	.26	.23	.12	.07	2.73	.14	.16	.09	.33	.28	.21
29	.27		.23	.12	.05	.56	.14	.16	.09	.28	.26	.19
30	.27		.23	.12	.07	.37	.15	.16	.09	.26	* .27	.18
31	.26		.23			.30		.14	11.4	.26		.21
Sum		7.51		4.86		11.58		37.13	14.70	47.57		8.11
	8.53		7.77		31.05				20.88		8.22	
Current Year 2003												Period 1938-2003
Extreme Gage Meters												Volume-Thousand Cubic Meters
Month	High	Low	Day	High	Low	Day	Average	Total	Average	Maximum	Minimum	
Jan.	0.180	0.145	! 7	0.35	2	0.21	0.28	737	505	1,420	38.9	
Feb.	.180	.150	! 3	.35	! 16	.23	.27	649	603	7,339	40.6	
Mar.	.220	.150	22	.56	! 7	.23	.25	671	721	3,214	72.6	
April	.230	.110	8	.63	! 17	.11	.16	420	1,493	20,483	93.3	
May	1.410	.085	27	74.2	! 23	.06	1.00	2,683	1,539	11,194	111	
June	.745	.110	6	12.3	28	.11	.39	1,001	2,570	77,118	53.6	
July	2.075	.105	6	172	! 3	.10	1.20	3,208	1,552	20,240	31.0	
Aug.	1.380	.095	31	70.4	22	.08	.47	1,270	1,931	31,967	51.8	
Sept.	1.755	.130	25	122	13	.16	.70	1,804	2,909	61,139	45.8	
Oct.	2.085	.150	11	174	7	.23	1.53	4,110	2,067	25,218	27.6	
Nov.	.190	.155	30	.39	4	.24	.27	710	512	3,521	25.9	
Dec.	.190	.135	12	.40	! 23	.18	.26	701	470	1,372	26.8	
Yearly	2.085	0.085		174		0.06	0.57	17,964	16,872	86,384	2,554	

* Discharge measurement(s) made on this day ! And other days

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

08-4528.00 SAN FELIPE SPRINGS AT DEL RIO, TEXAS

DESCRIPTION: Two large and at least two smaller springs rise near the northeast city limits of Del Rio, Texas in or near the channel of San Felipe Creek at latitude 29° 22' 20" and longitude 100° 53' 00". The total yield of these springs consists of waters measured in the Val Verde Canal at Del Rio, Texas and in San Felipe Creek at Moore Park, Del Rio, Texas and diversions by the city of Del Rio. Diversions by the San Felipe Irrigation Company through the Val Verde Canal are measured at a gaging station consisting of a paved measuring section, gravity well and graphic water-stage recorder located on the left side of the canal under the US Highway 277 Bridge across San Felipe Creek at latitude 29° 21' 55" and longitude 100° 53' 10". The bridge is located about 1.0 creek kilometer downstream from the source of the springs and 6.3 creek kilometers upstream from the confluence of the creek with the Rio Grande. The gaging station on San Felipe Creek at Moore Park consists of gravity well and graphic water-stage recorder located on the left bank about 91 meters downstream from the US Highway 277 Bridge at latitude 29° 21' 50" and longitude 100° 53' 10". This stream enters the Rio Grande at river kilometer 902, 0.8 river kilometer downstream from the international highway bridge between Del Rio, Texas and Cd. Acuna, Coahuila. The zeros of the gages for the two stations are, respectively, 287.30 meters and 283.70 meters above mean sea level, U. S. C. & G. S. datum.

RECORDS: Records for the Val Verde Canal and San Felipe Creek at Moore Park are based on 24 and 51 current-meter measurements at each station respectively, during the year, and continuous records of gage heights at Val Verde Canal. Flows at San Felipe Creek at Moore Park are pro-rated between current-meter measurements. Computations are by shifting control methods. Records for the Del Rio Pumping Plant are furnished by the City of Del Rio Water Department. Records available: Total yield of the springs, February 1961 through 2003.

REMARKS: The flows tabulated below represent only the total yield of the springs. All storm runoff has been eliminated from the tabulations.

			Average Flow in Cubic Meters per Second													
Daily:	Max.	4.84		July 23, 1976									Min.	0.83		July 29, 1964
Monthly:	Max.	4.33		December 1976									Min.	0.97		August 1964
Yearly:	Max.	4.22		1977									Min.	1.43		1963

MEAN DAILY DISCHARGE IN CUBIC METERS PER SECOND 2003 --- ANNUAL AND PERIOD SUMMARY												
Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	3.22	3.28	3.25	* 3.18	3.34	3.04	* 3.65	2.97	2.61	2.97	2.88	3.16
2	3.29	3.23	3.26	3.18	3.07	3.08	3.65	2.95	2.79	2.89	3.21	* 3.17
3	3.26	3.23	3.20	3.23	2.95	* 3.14	3.50	2.98	2.80	2.78	2.90	3.23
4	3.32	*	3.20	* 3.27	3.20	2.99	3.16	3.34	3.15	* 2.66	2.70	* 3.26
5	3.34	3.25	3.22	3.19	3.12	3.23	3.40	*	3.31	2.55	2.59	3.40
6	3.35	3.30	3.24	3.32	* 3.12	3.15	3.17	3.36	2.55	2.51	3.32	3.41
7	*	3.41	3.31	3.18	3.32	3.09	3.25	3.05	3.41	2.57	*	2.57
8	3.42	3.39	3.17	*	3.44	3.13	3.33	3.09	3.34	2.60	2.64	3.70
9	3.46	3.48	3.15	3.71	3.07	3.36	*	3.17	3.24	*	2.86	2.77
10	3.44	3.55	3.09	3.75	3.06	3.29	3.19	3.07	3.07	2.77	*	4.10
11	3.44	*	3.62	*	3.19	3.50	3.10	*	3.32	2.85	2.82	3.86
12	3.44	3.57	3.40	3.39	3.03	3.29	3.15	*	2.82	2.72	2.78	3.82
13	3.47	3.51	3.44	3.36	*	3.18	3.30	3.18	2.80	2.85	2.80	3.61
14	*	3.49	3.46	3.32	3.43	3.16	3.27	3.18	2.79	2.93	2.86	3.51
15	3.48	3.43	3.23	*	3.46	3.15	3.17	*	3.08	2.68	2.88	3.47
16	3.48	3.40	3.10	3.49	3.10	3.05	2.99	2.61	2.86	3.02	3.38	*
17	3.41	3.40	3.16	3.37	3.22	*	3.03	2.99	2.70	*	2.88	* 3.07
18	3.40	*	3.34	*	3.09	3.30	3.16	2.94	3.01	2.94	2.87	3.10
19	3.45	3.36	3.18	3.24	3.25	2.98	3.01	*	2.87	2.79	3.09	3.33
20	3.44	3.30	3.20	3.30	*	3.22	2.93	3.06	2.83	2.68	3.06	3.22
21	*	3.41	3.26	3.19	3.33	3.17	2.98	3.10	2.95	2.71	*	3.02
22	3.41	3.33	3.14	*	3.50	3.26	2.91	*	3.12	2.68	2.72	2.96
23	3.41	3.35	3.25	3.69	3.30	*	2.87	2.99	2.67	*	2.68	2.86
24	3.37	3.29	3.26	3.70	3.34	2.96	3.16	2.73	2.74	2.73	3.11	3.49
25	3.36	*	3.29	*	3.34	3.62	3.34	2.99	3.06	2.90	2.78	2.58
26	3.39	3.29	3.36	3.56	3.24	3.19	3.00	*	2.98	2.77	2.49	3.10
27	3.38	3.32	3.34	3.50	3.00	3.11	2.95	2.90	2.81	2.40	3.07	3.14
28	*	3.42	3.26	3.21	3.40	*	2.80	3.27	2.89	2.88	2.93	*
29	3.37	3.17	3.37	3.37	2.88	3.45	*	2.87	2.83	2.97	2.70	3.16
30	3.32	3.21	*	3.30	2.89	4.00	2.86	2.69	*	3.04	2.73	3.21
31	3.29	3.20			2.98	2.92	2.54			2.78		2.91
Sum	105.14	94.00	100.01	102.33	96.71	95.04	96.98	90.67	83.52	86.57	100.33	103.29
Current Year 2003												
Period 1961-2003												
Extreme Gage Meters												
Extreme-Cubic Meters per Second												
Month	High	Low	Day	@ High	Day	@ Low	Average	Total	Average	Maximum	Minimum	
Jan.			14	3.49	1	3.22	3.39	9,084	8,723	11,558	2,805	
Feb.			11	3.62	4	3.20	3.36	8,122	7,748	10,129	2,614	
Mar.			13	3.44	10	3.09	3.23	8,641	8,474	11,137	2,917	
April			10	3.75	1	3.18	3.41	8,841	8,214	10,610	2,826	
May			11	3.34	28	2.80	3.12	8,356	8,537	11,471	3,506	
June			30	4.00	23	2.87	3.17	8,211	8,257	11,162	3,060	
July			1	3.65	30	2.86	3.13	8,379	8,487	11,523	2,731	
Aug.			7	3.41	31	2.54	2.92	7,834	8,353	11,751	2,608	
Sept.			10	3.07	5	2.55	2.78	7,216	8,200	11,038	3,152	
Oct.			18	3.10	27	2.40	2.79	7,480	8,684	11,408	3,094	
Nov.			10	4.10	1	2.88	3.34	8,669	8,444	11,058	2,941	
Dec.			21	3.84	30	2.86	3.33	8,924	8,763	11,633	2,948	
Yearly				4.10		2.40	3.16	99,757	100,884	133,083	45,119	

* Discharge measurement(s) made on this day @ Mean daily ! And other days

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

08-4530.00 SAN FELIPE CREEK NEAR DEL RIO, TEXAS

DESCRIPTION: Bubbler gage, water-stage recorders (graphic and digital), and DCP with GOES high data rate telemetry located on the left bank at latitude 29°19'50", longitude 100°53'20", immediately upstream from the Silos Farm road bridge, 1.8 creek kilometers upstream from its confluence with the Rio Grande, and about 3.2 kilometers south-southeast of Del Rio, Val Verde County, Texas. This stream enters the Rio Grande at river kilometer 902, 0.8 river kilometer downstream from the international highway bridge between Del Rio, Texas and Cd. Acuna, Coahuila. The zero of the gage is 267.44 meters above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 30 current-meter measurements during the year, 24 by the United States Section and 6 by the Mexican Section of the Commission, and a continuous record of gage heights. Computations by shifting control methods. Records available: September 1931 through 2003.

REMARKS: The flow of this spring-fed creek is greatly modified by municipal and irrigation diversions upstream from the station. Backwater from the Rio Grande reaches this station when the Rio Grande at Del Rio reaches a stage of 4.6 meters, or a flow of about 1,700 CMS. On June 28, 1954 combined creek flow and backwater from the Rio Grande reached a stage of 7.47 meters at this station.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 3,340 CMS on August 24, 1998, with a gage height of 7.705 meters. Min. 0.01 CMS on July 20, 1953.

Average Flow in Cubic Meters per Second											
Daily:	Max.	464	August 24, 1998						Min.	0.04	July 21, 1953
Monthly:	Max.	22.8	June	1935					Min.	0.13	July 1953
Yearly:	Max.	3.97	1998						Min.	0.71	1953

MEAN DAILY DISCHARGE IN CUBIC METERS PER SECOND 2003 --- ANNUAL AND PERIOD SUMMARY												
Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	3.30	3.33	3.12	* 2.84	1.94	2.68	* 1.93	2.15	2.01	2.61	2.51	2.50
2	3.29	3.37	3.15	2.67	2.08	2.68	1.94	2.24	1.83	2.62	2.52	* 2.50
3	3.26	3.34	3.18	2.54	2.19	* 2.67	1.96	1.95	1.70	2.49	2.52	2.50
4	3.28	* 3.34	* 3.10	2.51	2.24	2.67	2.22	1.96	* 2.22	2.47	* 2.46	2.53
5	3.25	3.37	3.00	2.22	2.05	2.64	2.10	* 1.95	1.90	2.47	2.48	2.50
6	3.27	3.42	2.99	2.05	* 2.02	2.71	8.04	1.76	1.88	2.49	2.55	2.34
7	* 3.24	3.30	2.95	1.99	2.02	2.67	2.72	1.62	1.84	* 2.39	2.54	2.15
8	3.30	3.41	2.96	2.15	2.02	2.65	2.64	1.55	1.85	3.02	2.56	2.04
9	3.29	3.35	2.85	2.08	1.95	2.61	2.78	1.63	1.80	* 2.76	2.56	2.02
10	3.28	3.28	2.61	2.06	1.98	3.79	2.93	1.65	1.63	2.40	2.57	2.07
11	3.32	3.30	2.68	1.99	2.00	2.89	2.97	1.63	1.84	8.42	2.43	2.11
12	3.39	3.25	2.49	2.02	1.94	* 2.93	3.06	1.76	2.48	3.81	2.46	2.22
13	3.26	3.31	2.51	2.09	2.07	2.97	3.10	1.79	1.91	2.93	2.52	2.35
14	3.26	3.31	2.71	2.12	1.95	2.83	2.88	* 2.20	3.22	2.86	2.52	2.40
15	3.24	3.27	2.79	* 2.14	1.83	2.92	* 2.83	1.95	2.37	2.79	2.47	2.32
16	3.22	3.32	2.84	2.16	1.84	2.99	3.41	2.02	2.64	2.78	2.46	* 2.22
17	3.26	3.29	2.70	2.22	1.82	* 2.92	2.69	2.00	* 2.70	2.77	2.47	2.11
18	3.25	* 3.30	* 2.58	2.35	1.83	2.86	2.73	1.85	* 2.68	2.85	* 2.48	* 2.15
19	3.28	3.29	2.43	2.49	1.82	2.81	2.80	* 1.82	2.53	2.91	2.44	2.18
20	3.23	3.30	2.46	2.44	* 1.80	2.41	2.50	1.84	2.53	2.78	2.51	2.22
21	* 3.17	3.39	2.50	2.41	1.81	2.25	2.55	1.86	2.54	* 2.79	2.53	2.30
22	3.11	3.18	2.79	2.30	1.83	2.26	2.37	1.93	2.45	2.80	2.54	2.85
23	3.10	3.18	2.56	2.19	1.69	2.29	2.31	2.04	2.44	2.84	2.56	3.27
24	3.09	3.24	2.61	2.15	1.68	2.00	2.25	2.06	2.43	2.80	2.54	3.41
25	3.14	3.17	2.57	1.97	1.71	1.86	2.27	1.96	2.98	2.87	2.56	3.55
26	3.17	3.13	2.51	2.01	1.88	1.83	2.33	1.90	8.75	2.90	2.54	3.76
27	3.15	3.10	2.56	2.05	19.9	1.78	2.30	1.91	2.77	2.88	2.56	3.95
28	3.19	3.10	2.54	2.03	4.65	1.75	2.32	1.89	2.71	2.69	2.49	4.16
29	3.27		2.56	2.01	3.24	1.75	2.59	1.87	2.64	2.65	2.51	4.27
30	3.30		2.59	1.97	2.78	1.83	2.46	1.93	2.60	2.73	2.50	4.37
31	3.35		2.67		2.76		2.12	2.08		2.59		3.95
Sum	91.94	84.56	66.22	83.32	75.90	84.10	58.75	75.87	91.16	75.36	85.27	
	100.51											
Current Year 2003												
Period 1932-2003												
Extreme Gage Meters				Extreme-Cubic Meters per Second				Volume-Thousand Cubic Meters				
Month	High	Low	Day	High	Low	Average	Total	Average	Maximum	Minimum		
Jan.	1.605	1.495	12	4.05	25	2.76	3.24	8,684	6,916	10,985	1,152	
Feb.	1.575	1.480	8	3.97	28	2.58	3.28	7,944	5,847	10,642	601	
Mar.	1.555	1.360	22	4.24	10	1.74	2.73	7,306	5,626	10,304	850	
April	1.415	1.315	2	2.92	17	1.85	2.21	5,721	5,798	12,836	698	
May	3.850	1.300	27	70.4	124	1.58	2.69	7,199	6,519	21,697	912	
June	2.225	1.280	10	14.3	27	1.53	2.53	6,558	6,618	59,059	370	
July	2.625	1.300	6	23.3	1	1.66	2.71	7,266	5,698	27,232	352	
Aug.	1.555	1.270	14	4.54	17	1.46	1.90	5,076	5,767	47,764	432	
Sept.	2.810	1.285	26	28.3	10	1.49	2.53	6,555	6,595	35,373	1,076	
Oct.	2.600	1.330	11	22.6	7	2.01	2.94	7,876	6,909	17,551	1,233	
Nov.	1.420	1.340	3	2.93	3	2.08	2.51	6,511	6,094	10,567	649	
Dec.	1.545	1.320	30	4.64	9	1.77	2.75	7,367	6,333	10,660	612	
Yearly	3.850	1.270		70.4		1.46	2.67	84,063	74,720	125,323	22,441	

* Discharge measurement(s) made on this day ! And other days

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

08-4539.00 DIVERSIONS FROM THE RIO GRANDE
MAVERICK CANAL AT MILE 13 NEAR QUEMADO, TEXAS

DESCRIPTION: Foot bridge for making current-meter measurements, water-stage recorder (graphic and digital), and DCP with GOES high data rate telemetry, located on the left bank of a gunnite-lined section of the canal at latitude 29°03'00", longitude 100°39'40", 0.8 canal kilometer downstream from the Tequesquite Creek Siphon, 5.6 canal kilometers upstream from the Las Moras Creek Siphon, about 12.1 kilometers north-northwest of Quemado, Maverick County, Texas and 20.6 kilometers downstream from the canal intake. The canal intake is at river kilometer 875, 28.0 river kilometers downstream from the international highway bridge between Del Rio, Texas and Cd. Acuna, Coahuila. The elevation of the zero of the gage has not been determined.

RECORDS: Based on 97 current-meter measurements during the year and a continuous record of gage heights. 26 measurements were made by the U.S. Section, and 71 measurements were made by the Maverick County Water Control and Improvement District No. 1. Computations by shifting control methods. Gage heights at this station are affected by gate operation at Las Moras Siphon. Records available: June 21, 1949 through 2003.

REMARKS: At canal kilometer 51.2 a portion of the diverted water returns to the river through the Maverick Power Plant, and the remainder enters the Maverick Canal Extension. In 2003, 5,232 hectares of land were irrigated between this station and the power plant, and 10,333 hectares were irrigated from the extension, making a total of 15,565 hectares. A total of 648,833 TCM returned to the Rio Grande at the power plant and through irrigation system returns published in the following pages of this bulletin.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 52.4 CMS on February 15, 1989. Min. no flow several days in June, July, and November 1954; and October 1978.

			Average Flow in Cubic Meters per Second**											
Daily:	Max.	50.4	Aug. 19, 1990				Min.	0	Several days, 1978, 2003					
Monthly:	Max.	47.5	April 1990				Min.	8.35	Feb. 1977					
Yearly:	Max.	42.2	1980				Min.	17.9	1972					

MEAN DAILY DISCHARGE IN CUBIC METERS PER SECOND 2003 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	19.5	19.7	19.4	* 18.3	38.7	26.8	* 15.8	18.7	30.2	19.4	18.9	19.8
2	* 19.5	19.6	19.7	18.1	* 39.1	26.2	15.3	18.7	* 26.4	20.0	18.8	* 20.1
3	19.3	20.0	20.1	18.1	38.2	* 27.3	14.8	15.5	25.0	19.4	* 18.9	20.5
4	19.3	* 19.7	* 20.0	18.3	38.5	27.1	15.4	7.05	24.9	19.4	19.6	20.1
5	19.4	19.2	19.8	18.2	38.6	26.7	16.5	* 22.1	25.6	19.4	19.8	19.9
6	19.5	19.5	19.6	19.0	38.6	27.5	18.3	23.7	25.4	* 19.3	19.9	19.8
7	19.7	19.4	19.1	18.2	38.0	27.5	25.2	23.9	24.7	* 19.4	19.8	19.6
8	19.6	19.5	18.5	18.8	38.6	26.3	25.9	25.2	24.3	20.1	19.3	19.5
9	19.6	19.2	18.5	18.7	38.3	25.9	20.4	25.2	24.2	21.1	19.3	19.0
10	19.5	18.8	18.5	17.9	38.2	27.9	19.4	25.6	24.4	20.8	19.6	18.7
11	19.3	18.7	18.3	17.4	38.9	27.4	19.2	25.5	24.4	18.6	19.6	18.8
12	19.9	19.2	18.5	16.9	38.5	27.0	19.1	26.2	24.8	7.04	19.6	19.0
13	20.1	19.5	18.4	16.5	37.7	26.7	18.8	26.7	22.4	0	20.1	19.3
14	19.5	19.6	18.3	16.5	38.7	26.8	18.8	26.9	17.2	0	19.3	19.4
15	19.2	19.4	18.4	22.2	38.7	27.4	* 18.7	29.9	17.8	0	19.3	19.7
16	19.4	19.0	18.5	* 28.6	38.5	27.2	19.5	31.2	* 17.7	0	19.6	* 19.7
17	19.1	18.9	19.0	28.4	39.0	* 26.8	21.7	30.5	18.7	0	19.5	20.0
18	19.1	18.7	* 19.2	29.2	38.5	24.7	19.7	31.2	19.5	0	* 19.5	19.8
19	19.2	18.9	18.8	29.4	37.5	25.5	18.7	* 32.4	19.1	0	19.2	19.8
20	19.5	* 19.3	18.8	29.3	* 34.9	25.8	18.4	32.8	19.0	0	19.1	19.8
21	* 20.0	19.6	18.6	29.1	38.2	25.8	18.1	32.0	18.9	0	19.7	19.9
22	20.1	19.6	19.2	29.7	39.7	25.5	18.0	26.5	18.8	0	20.2	20.1
23	19.9	19.3	18.8	30.7	40.0	21.8	18.0	29.0	18.7	7.63	19.6	20.4
24	19.7	19.1	18.4	30.7	39.9	21.0	18.1	27.1	18.6	15.0	19.3	20.2
25	19.8	19.5	* 18.6	30.3	38.8	18.3	18.0	28.9	18.8	16.9	19.4	20.4
26	20.0	19.4	18.7	29.4	32.8	15.7	17.9	28.4	18.6	18.3	19.7	20.8
27	19.6	19.3	18.4	32.0	31.9	16.0	17.9	29.9	24.6	* 18.8	19.8	20.8
28	19.3	19.1	18.5	38.6	32.7	15.9	18.1	30.8	20.8	18.7	19.6	21.0
29	19.6		18.5	38.5	32.3	15.8	18.3	30.4	19.9	19.0	19.5	20.7
30	19.4		18.4	37.8	29.1	15.9	18.5	29.1	19.4	19.3	19.5	20.7
31	19.5		18.4		29.4		18.6	30.0		19.5		20.4
Sum		540.7	583.9	744.8	1,150.5	726.2	579.1	821.05	652.8	377.07	585.0	617.7
	606.1											

Current Year 2003

Period 1968-2003

Month	Extreme Gage Meters			Extreme-Cubic Meters per Second			Volume-Thousand Cubic Meters		
	High	Low	Day	High	Low	Average	Total	Average	Maximum
Jan.	2.315	2.185	!13	20.4	!14	18.9	19.6	52,367	84,398
Feb.	2.325	2.115	3	20.8	!16	18.1	19.3	46,716	83,395
Mar.	2.165	1.890	3	20.5	!8	18.3	18.8	50,449	94,832
April	2.890	1.885	29	41.0	14	16.2	24.8	64,351	96,438
May	2.880	2.145	25	41.3	30	24.8	37.1	99,403	102,568
June	2.380	1.570	10	30.1	26	15.5	24.2	62,744	97,012
July	2.465	1.600	7	30.3	3	14.7	18.7	50,034	96,253
Aug.	2.600	.500	28	34.1	4	5.14	26.5	70,939	96,633
Sept.	2.480	1.640	1	32.1	!14	16.9	21.8	56,402	90,380
Oct.	2.025	0	9	23.0	!12	0	12.2	32,579	89,350
Nov.	1.830	1.720	13	20.8	2	18.6	19.5	50,544	82,578
Dec.	1.970	1.770	28	21.1	10	18.6	19.9	53,369	82,340
Yearly	2.890	0		41.3		0	21.9		

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

08-4550.00 PINTO CREEK NEAR DEL RIO, TEXAS

DESCRIPTION: Solid ledge rock and concrete control, bubbler gage, DCP with GOES high data rate telemetry, and water-stage recorder (graphic and digital), located on the right bank at latitude 29° 08'45", longitude 100° 43'05", 2.6 creek kilometers upstream from its confluence with the Rio Grande, and about 30.6 kilometers southeast of Del Rio, Val Verde County, Texas. This stream enters the Rio Grande at river kilometer 864, 9.1 river kilometers downstream from the Maverick County Water Control and Improvement District No. 1 diversion dam. The zero of the gage is 248.01 meters above mean sea level, U.S.C. & G.S. datum.

RECORDS: Based on 30 current-meter measurements during the year, 24 by the United States Section and 6 by the Mexican Section of the Commission, and a continuous record of gage heights. Records available: September 1955 through 2003 at this station, and November 22, 1928 through August 1955 at a site 6.3 kilometers upstream.

REMARKS: Flow of this spring-fed creek is modified by small irrigation diversions upstream from the station. When flow in the Rio Grande exceeds about 2,270 CMS at the mouth of this creek, backwater may reach the station. At this station during the Rio Grande flood of June 1954, backwater reached a gage height of 8.78 meters, or an elevation of 256.79 meters above mean sea level.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 5,270 CMS on June 24, 1948 with a gage height of 9.75 meters. Min. frequently no flow.

			Average Flow in Cubic Meters per Second											
Daily:	Max.	799	June 24, 1948						Min.	0	Frequently			
Monthly:	Max.	27.0	June 1948						Min.	0	Frequently			
Yearly:	Max.	2.97	1932						Min.	0.04	1980			

MEAN DAILY DISCHARGE IN CUBIC METERS PER SECOND 2003 --- ANNUAL AND PERIOD SUMMARY													
Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	
1	0.67	0.63	0.53	* 0.37	0.25	0.18	* 0.14	0.18	0.15	0.09	0.16	0.20	
2	*	.65	.63	.52	.37	* .24	.17	.14	.13	* .12	.08	.16	* .22
3	.65	.64	.49	.38	.22	* .15	.12	.12	.06	.08	.17	.24	
4	.66	*	.61	* .48	.37	.21	.13	.12	.10	.08	.09	* .16	.23
5	.65	.60	.47	.37	.21	.13	.11	* .07	.04	.10	.16	.23	
6	.66	.61	.45	.37	.18	.14	1.49	.11	.03	.10	.17	.22	
7	.65	.61	.43	.36	.18	.13	.52	.14	.02	* .08	.17	.21	
8	.62	.65	.43	.43	.16	.13	.38	.10	.02	.11	.16	.21	
9	.64	.65	.42	.33	.15	.13	.27	.04	.02	* .12	.19	.22	
10	.64	.63	.42	.36	.16	1.60	.21	.04	.02	.11	.16	.20	
11	.62	.60	.42	.38	.17	1.14	.18	.05	.01	.32	.17	.21	
12	.68	.59	.42	.40	.15	* .49	.17	.04	.01	.58	.18	.22	
13	.71	.58	.43	.40	.17	.35	.16	.01	.01	.34	.18	.23	
14	.67	.59	.45	.40	.16	.94	.13	* .01	.05	.18	.16	.23	
15	.64	.57	.45	.41	* .14	.90	.11	.01	.13	.14	.17	.23	
16	.64	.52	.43	.41	.13	1.39	.25	.01	.12	.13	.18	* .23	
17	.60	.52	.43	.32	.12	.60	* .29	.02	* .08	.13	.19	.21	
18	.59	.54	.41	.27	.11	.31	.07	.04	* .05	.12	* .18	* .21	
19	.61	.56	* .37	.38	.10	* .23	.05	.04	.04	.11	.16	.22	
20	.60	*	.56	.35	.37	.14	.21	.03	.04	.06	.11	.14	
21	.60	.57	.37	.29	.11	.20	.02	.04	.08	* .11	.16	.24	
22	.58	.60	.54	.30	.11	.18	.07	* .05	.07	.10	.16	.24	
23	*	.56	.59	.52	.31	.12	.18	.11	.06	.06	.10	.17	
24	*	.56	.56	.45	.30	.09	.17	.10	.07	.05	.10	.15	
25	.58	.53	.43	.25	.08	.17	.09	.05	.08	.11	.15	.25	
26	.61	.54	.40	.22	.67	.17	.07	.03	.52	.11	.17	.27	
27	.62	.54	.39	.21	2.91	.17	.07	.04	.23	.11	.19	.30	
28	.62	.54	.37	.20	.92	.17	.09	.06	.13	.12	.19	.30	
29	.62		.34	.23	.32	.18	.07	.07	.09	.13	.18	.27	
30	.61		.35	.25	.23	.19	.08	.03	.09	.14	.19	.27	
31	.61		.37		.20	.22	.04			.15		.29	
Sum	19.42	16.36	10.01	9.11	11.23	5.93	1.84	2.52	4.40	5.08	7.30		
Current Year 2003													
Extreme Gage Meters				Extreme-Cubic Meters per Second				Volume-Thousand Cubic Meters					
Month	High	Low	Day	High	Day	Low	Average	Total	Average	Maximum	Minimum		
Jan.	0.430	0.400	13	0.74	23	0.55	0.63	1,678	729	2,784	0		
Feb.	.405	.370	8	.67	!16	.49	.58	1,414	762	7,106	0		
Mar.	.410	.350	22	.60	29	.31	.43	1,152	697	3,085	0		
April	.375	.270	8	.47	28	.19	.33	865	1,399	33,464	0		
May	1.265	.220	27	20.5	!25	.06	.29	787	1,980	36,248	0		
June	.720	.235	10	3.45	!4	.12	.37	970	4,151	69,981	0		
July	.720	.230	6	3.36	!21	.01	.19	512	374	37,030	0		
Aug.	.275	.180	1	.21	!12	.01	.06	159	2,173	60,070	0		
Sept.	.485	.200	26	1.39	!7	.01	.08	218	2,188	60,397	0		
Oct.	.410	.220	11	.90	2	.06	.14	380	1,513	15,227	0		
Nov.	.270	.245	28	.21	19	.13	.17	439	643	3,196	0		
Dec.	.300	.260	!27	.31	!1	.19	.24	631	735	3,041	0		
Yearly	1.265	0.180		20.5		0.01	0.29	9,205	17,344	94,053	1,178		

* Discharge measurement(s) made on this day ! And other days

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

08-4555.00 RIO SAN DIEGO NEAR JIMENEZ, COAHUILA

DESCRIPTION: Cableway, masonry and concrete Cipolletti weir of 22 CMS capacity, gravity well, and water-stage recorder located on the left bank of Rio San Diego, and gravity well and water-stage recorder on Acequia de Dolores, an irrigation canal that runs along the left bank of the river under the cable, located at latitude 29° 04' 20", longitude 100° 47' 35", about 6.0 kilometers west of Jimenez, Coahuila, and 7.0 river kilometers upstream from its confluence with the Rio Grande. Part of the canal flow measured here returns to the river downstream. This stream enters the Rio Grande at river kilometer 856, 16.8 river kilometers downstream from Maverick County Water Control and Improvement District No. 1 diversion dam and 46.4 river kilometers downstream from the international highway bridge between Del Rio, Texas and Cd. Acuna, Coahuila. The zero of the gage is 253.51 meters above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 59 current meter measurements, 56 measurements by the Mexican Section, and 3 by the U. S. Section, the weir discharge table and a continuous record of gage heights. Records available: October 1932 through 2003.

REMARKS: Reservoirs and irrigation diversions upstream from these stations modify the flow of this spring-fed stream. On December 24, 1955, the zero of the gage was raised 0.80 meters; in November 1961 an additional 0.06 meters, and the capacity of the weir was increased from 20 CMS to 22 CMS.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 2,320 CMS on June 17, 1961 with a gage height of 6.31 meters. Min. no flow occurred on several occasions.

Average Flow in Cubic Meters per Second											
Daily:	Max.	1,040		July 18, 1975		Min.	0		Occasionally		
Monthly:	Max.	67.5		Oct. 1932		Min.	0.07		July 1996		
Yearly:	Max.	17.6		1976		Min.	0.68		1956		

MEAN DAILY DISCHARGE IN CUBIC METERS PER SECOND 2003 --- ANNUAL AND PERIOD SUMMARY												
Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	2.36	1.62	1.62	3.12	0.67	4.54	1.73	12.8	8.67	5.84	10.8	6.70
2	2.36	1.62	1.62	3.12	.61	4.11	1.54	12.7	* 6.72	5.84	10.6	7.13
3	2.28	1.62	1.62	3.13	.61	* 3.31	1.30	12.5	6.35	5.68	10.5	7.40
4	2.16	* 1.45	* 1.62	3.13	.64	2.96	1.06	12.2	7.05	5.62	10.3	7.40
5	2.16	1.45	1.62	3.14	.61	3.42	.99	12.2	6.57	5.62	10.3	7.32
6	2.16	1.45	1.62	3.14	* .61	4.24	13.2	12.1	6.16	5.56	10.2	7.13
7	* 2.19	1.45	1.62	3.15	.58	3.70	6.96	11.9	6.05	* 5.49	10.0	7.13
8	2.16	1.62	1.55	* 3.15	.52	3.39	4.27	11.8	6.78	5.57	10.0	7.13
9	2.09	1.62	1.45	2.96	.49	3.28	3.95	9.92	* 7.95	5.84	9.69	7.13
10	1.97	1.29	1.45	2.76	.49	27.7	3.90	9.31	7.67	6.35	9.54	6.91
11	1.97	* 1.06	* 1.45	2.57	.44	4.51	3.81	9.05	7.67	9.84	* 9.24	6.91
12	1.97	1.06	1.45	2.38	.39	3.37	4.27	* 8.58	7.81	13.2	9.09	6.91
13	1.97	1.30	1.45	2.18	* .49	6.44	4.70	8.23	7.81	14.0	8.95	6.81
14	* 1.97	1.79	* 1.29	1.99	.49	7.67	5.67	8.04	8.19	* 14.6	* 8.80	6.70
15	1.97	1.97	1.29	1.80	* .49	5.59	* 7.06	7.81	7.88	14.4	8.80	6.64
16	1.79	2.87	1.37	1.60	.41	6.27	9.16	8.74	7.26	13.8	8.80	6.48
17	1.79	2.88	1.45	1.41	.39	* 6.27	31.4	10.0	7.13	13.1	8.51	6.48
18	1.79	* 2.77	* 1.45	1.21	.47	6.00	* 51.7	9.80	7.13	12.6	* 8.37	5.28
19	1.79	2.77	1.29	1.02	.46	5.19	25.5	* 7.75	6.80	12.5	8.23	4.13
20	1.70	2.77	1.29	.83	* .43	4.43	22.7	6.98	6.92	12.3	8.23	3.78
21	* 1.62	2.88	1.23	.63	.39	4.19	* 20.8	6.70	6.99	* 12.2	7.95	3.56
22	1.62	2.88	1.37	* .44	.39	3.91	19.2	6.59	6.70	12.0	7.81	3.32
23	1.62	2.88	2.47	.43	.39	3.70	18.0	6.48	* 6.54	11.9	7.54	3.21
24	1.62	2.77	2.42	.42	.39	* 3.44	17.1	6.27	6.27	11.9	7.40	3.06
25	1.62	* 2.59	* 2.36	.41	.39	3.07	16.5	6.40	6.81	11.9	* 7.40	2.99
26	1.62	1.99	2.26	.41	7.97	2.81	15.8	* 6.48	11.1	11.5	7.26	2.88
27	1.62	1.79	1.64	.40	* 30.2	2.47	15.3	6.66	6.80	11.5	7.13	2.99
28	* 1.62	1.62	1.20	.39	23.9	2.22	14.9	6.38	6.59	* 11.5	7.04	3.10
29	1.62	.99	* .38	.38	5.39	2.03	14.4	6.20	6.27	11.4	6.98	2.94
30	1.62	.99	.37	3.96	1.88	13.9	6.05	* 5.84	11.2	11.2	6.91	2.86
31	1.62	.99		4.46		13.4	10.4			11.0		2.77
Sum	58.42	55.83	52.07	88.12	146.11	384.17	277.02	214.48	315.75	262.37	165.18	
Current Year 2003 Period 1932-2003												
Extreme Gage Meters				Extreme-Cubic Meters per Second				Volume-Thousand Cubic Meters				
Month	High	Low	Day	High	Low	Average	Total	Average	Maximum	Minimum		
Jan.	0.090	0.070	1	2.36	!20	1.62	1.88	5,047	9,964	44,937	2,300	
Feb.	.110	.050	1	3.21	!10	.99	1.99	4,824	7,844	31,769	1,279	
Mar.	.100	.050	23	2.77	!29	.99	1.53	4,103	7,043	33,352	797	
April	.165	.025	7	5.62	30	.37	1.74	4,499	7,764	49,678	698	
May	1.030	.020	27	95.9	27	.33	2.84	7,614	13,113	148,269	395	
June	1.225	.075	10	128	30	1.79	4.87	12,624	14,573	133,550	282	
July	1.250	.050	17	133	!4	.99	12.4	33,192	16,584	167,938	179	
Aug.	.375	.175	31	18.7	29	6.05	8.94	23,935	14,459	112,553	392	
Sept.	.445	.170	26	24.4	30	5.84	7.15	18,531	20,116	116,770	843	
Oct.	.355	.160	11	17.1	!6	5.40	10.2	27,281	25,592	180,878	1,011	
Nov.	.265	.195	1	10.9	30	6.91	8.75	22,669	17,394	84,231	990	
Dec.	.205	.100	!2	7.40	!26	2.77	5.33	14,272	12,325	55,901	1,389	
Yearly	1.250	0.020		133		0.33	5.66	178,591	166,771	557,477	21,508	

* Discharge measurement(s) made on this day ! And other days

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

08-4557.00 RIO GRANDE NEAR JIMENEZ, COAHUILA AND QUEMADO, TEXAS

DESCRIPTION: Cableway, control weir of 36 CMS capacity, gravity well, and water-stage recorder located on the right bank at latitude 29°03'00", longitude 100°39'50", and river kilometer 853; 2.4 kilometers south-southeast of Jimenez, Coahuila, 3.0 river kilometers downstream from Rio San Diego, about 12.1 kilometers north-northwest of Quemado, Maverick County, Texas, 19.8 river kilometers downstream from the Maverick County Water Control and Improvement District No. 1 diversion dam, and 49.4 river kilometers downstream from the international highway bridge between Del Rio, Texas and Cd. Acuna, Coahuila. The zero of the gage is 234.39 meters above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 29 current-meter measurements during the year, 17 by the Mexican Section and 12 by the United States Section of the Commission, and a continuous record of gage heights. Computations by shifting control methods prior to completion of the weir and for flows exceeding the capacity of the weir thereafter. Computations for flows within the capacity of the weir were based on a stable control weir rating curve defined by current-meter measurements. Records available 1968 through 2003. Records, excluding some high flow periods, are also available from 1956 through May 1965 for a station 14.0 river kilometers upstream. Records prior to 1976 were published under title "Rio Grande below Maverick Dam near Quemado, Texas."

REMARKS: This station was placed in operation January 1, 1965 and replaces the station "Rio Grande below Maverick Dam near Del Rio, Texas," which stopped operating June 1, 1965. Irrigation diversions 21.5 river kilometers upstream largely control the flow at this station. The weir was placed in operation June 1, 1967, at which time the zero of the gage was set 1.00 meter higher.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 4,250 CMS on August 24, 1998, with a gage height of 12.1 meters. Min. 0.05 CMS on September 21, 1995, with a gage height of 0.055 meters.

Daily:	Max.	3,220	Average Flow in Cubic Meters per Second	Min.	0.08	April	1983
Monthly:	Max.	602	August 24, 1998	Min.	0.80	June	1969
Yearly:	Max.	124	Sept. 1974	Min.	8.09		1968

MEAN DAILY DISCHARGE IN CUBIC METERS PER SECOND 2003 --- ANNUAL AND PERIOD SUMMARY												
Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	3.74	2.33	2.77	1.73	72.5	7.96	2.12	18.2	15.9	8.58	16.4	10.3
2	3.74	2.33	2.77	1.73	70.4	7.44	1.92	18.2	11.2	8.58	16.0	10.9
3	3.74	2.33	2.77	1.54	71.5	6.58	1.73	18.6	9.46	8.58	15.6	11.5
4	3.74	*	2.33	*	2.77	1.54	75.6	5.87	1.73	38.5	9.48	8.58
5	3.74	2.33	2.77	1.54	70.2	6.04	1.65	29.8	10.1	8.58	15.4	11.5
6	3.74	2.33	2.77	1.54	72.6	7.68	32.6	25.8	10.1	8.44	15.1	11.3
7	4.00	2.55	2.55	1.54	73.5	7.90	27.2	25.8	8.38	*	8.23	15.0
8	4.00	2.68	2.77	*	3.24	75.4	7.27	14.7	25.3	8.26	7.89	14.7
9	4.00	2.77	3.24	2.25	74.7	6.70	6.91	25.1	10.5	8.78	14.7	9.83
10	3.74	2.68	3.24	2.12	72.0	55.1	5.26	24.9	11.1	9.98	14.3	9.62
11	3.49	*	2.55	*	3.24	2.12	75.9	12.4	4.81	24.1	10.9	13.1
12	3.24	2.33	3.24	2.12	72.1	*	8.33	4.81	20.9	10.7	85.1	13.9
13	3.00	2.33	3.24	2.12	72.7	11.0	5.26	23.0	10.7	43.8	13.7	9.41
14	2.77	2.68	3.24	2.12	73.9	20.4	6.28	*	14.9	12.4	39.2	13.5
15	2.77	2.77	3.24	*	3.24	73.9	13.3	*	9.62	13.9	36.7	13.1
16	2.55	3.24	3.24	9.12	75.7	14.5	13.1	15.1	*	10.5	35.8	13.1
17	2.55	3.74	3.00	8.94	75.7	*	13.0	24.7	16.8	10.3	35.2	13.1
18	2.55	*	3.74	*	2.33	9.78	76.3	13.0	66.4	17.3	*	7.56
19	2.55	3.74	2.00	10.8	75.2	10.9	33.5	*	13.1	9.86	34.1	12.3
20	2.55	*	3.74	1.92	10.1	*	75.3	9.18	28.6	13.9	9.80	33.5
21	*	2.33	3.74	1.73	10.8	73.0	9.44	26.5	15.6	9.98	*	32.9
22	2.33	3.74	1.84	10.6	77.4	6.21	24.4	19.9	9.48	32.9	11.6	4.26
23	2.33	3.74	2.55	9.82	76.7	6.44	23.7	16.6	8.58	29.7	11.1	3.49
24	*	2.33	3.74	3.00	10.2	76.9	*	4.36	22.4	17.2	7.89	19.6
25	2.33	3.74	*	3.00	9.13	67.6	3.74	21.7	16.1	7.89	18.2	10.7
26	2.33	3.24	3.00	10.6	32.5	3.32	21.0	17.1	32.0	17.7	10.9	3.49
27	2.33	2.77	2.68	27.9	102	2.88	20.5	16.7	17.8	17.7	10.9	3.49
28	2.33	2.77	1.92	57.8	107	2.66	19.9	15.9	9.63	17.3	10.6	3.49
29	2.33		1.73	67.5	20.7	2.55	19.6	15.9	8.75	17.1	10.6	3.49
30	2.33		1.54	60.0	10.2	2.33	19.1	17.5	8.58	17.1	10.6	3.24
31	2.33		1.54		8.77		18.8	15.0		16.4		
Sum	91.83	83.00		353.58	2,127.87	288.48	530.50	606.7	332.22	713.72	393.4	228.83

Current Year 2003						Period 1968-2003					
Extreme Gage Meters			Extreme-Cubic Meters per Second			Volume-Thousand Cubic Meters					
Month	High	Low	Day	High	Low	Average	Total	Average	Maximum	Minimum	
Jan.	0.125	0.090	17	4.00	24	2.25	2.96	7,934	53,713	216,588	5,954
Feb.	.125	.090	21	4.00	11	2.25	2.96	7,171	83,992	495,046	7,139
Mar.	.115	.070	111	3.49	!30	1.54	2.63	7,054	103,444	486,605	2,805
April	.895	.070	29	106	!3	1.54	11.8	30,549	130,015	502,502	6,204
May	1.905	.160	27	375	30	5.98	68.6	183,848	200,582	608,342	8,109
June	1.395	.090	10	224	30	2.33	9.62	24,925	135,948	489,197	2,061
July	.985	.070	8	124	5	1.54	17.1	45,835	112,227	384,578	2,864
Aug.	.610	.220	4	50.7	26	9.98	19.6	52,419	136,464	876,848	6,347
Sept.	.615	.190	26	51.1	8	7.89	11.1	28,704	158,880	1,559,261	14,929
Oct.	1.050	.190	12	138	!7	7.89	23.0	61,665	161,905	1,025,395	13,827
Nov.	.300	.225	1	16.4	30	10.3	13.1	33,990	71,842	615,686	10,933
Dec.	.245	.110	3	11.9	!30	3.24	7.38	19,771	50,640	223,396	9,234
Yearly	1.905	0.070		375		1.54	16.0	503,865	1,399,652	3,909,913	256,561

* Discharge measurement(s) made on this day ! And other days

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

08-4571.00 RIO SAN RODRIGO AT EL MORAL, COAHUILA

DESCRIPTION: Bubbler gage, control weir of 130 cms capacity, and water-stage recorder located on the left bank at El Moral, Coahuila, latitude 28° 53' 20", longitude 100° 37' 55", 1.6 river kilometers from the confluence with the Rio Grande, and about 25 kilometers northwest of Piedras Negras, Coahuila. This stream enters the Rio Grande at river kilometer 834, 39.3 river kilometers downstream from the Maverick County Water Control and Improvement District No. 1 diversion dam and 35.2 river kilometers upstream from the international highway bridge between Eagle Pass, Texas and Piedras Negras Coahuila. The zero of the gage is 228.89 meters above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 55 current-meter measurement during the year, 4 by the United States Section, and 51 by the Mexican Section, and a continuous record of gage heights. Computations by shifting control methods. Records available: 1962 through 2003.

REMARKS: Prior to 1976 this station was published under the heading "Rio San Rodrigo near Mouth at El Moral, Coahuila." The flow of this spring-fed stream is modified by diversions above this station. La Fragua Dam, located about 19 river kilometers upstream from this station, began operation in 1991. The concrete control weir, placed in operation on November 25, 1969, was destroyed by the flood of July 12, 1976, and the station was relocated on October 15, 1976.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 3,970 CMS on July 18, 1975, with a gage height of 5.62 meters. Min. frequently no flow.

Average Flow in Cubic Meters per Second										
Daily:	Max.	1,260	July 18, 1975		Min.	0	Frequently			
Monthly:	Max.	209	July 1976		Min.	0	Frequently			
Yearly:	Max.	23.7	1976		Min.	0.07	Frequently			1996

MEAN DAILY DISCHARGE IN CUBIC METERS PER SECOND 2003 --- ANNUAL AND PERIOD SUMMARY												
Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1.36	0.56	0.48	* 0.30	0.13	0.06	* 0.18	* 4.42	* 3.06	* 2.25	3.03	* 2.62
2	.67	.54	.43	.29	* .14	* .06	.18	4.21	2.07	2.01	3.24	2.82
3	.65	* .52	* .40	.28	.09	.05	.18	4.00	1.71	1.85	* 3.39	2.96
4	.63	.57	.36	.27	.07	.05	.18	3.78	2.87	1.85	3.46	2.96
5	.62	.61	.34	.26	.07	.04	.18	3.57	4.11	1.88	3.39	2.89
6	.60	.66	.30	.26	.07	.03	19.2	3.36	3.34	* 1.88	3.36	2.85
7	* .58	.70	.28	.26	.07	.02	6.10	3.15	2.60	1.90	3.46	2.71
8	.68	.75	.26	* .26	.07	.02	.88	2.94	2.30	1.93	3.39	* 2.66
9	.78	.79	.26	.23	.07	* .01	.18	2.73	* 2.01	2.37	3.17	2.73
10	.89	* .84	* .26	.22	.07	59.0	.18	2.51	1.88	2.82	* 3.17	3.35
11	.99	.83	.26	.21	.07	3.53	.19	2.30	1.84	3.86	3.10	2.21
12	1.09	.82	.26	.20	* .07	.83	.19	* 2.09	1.88	12.1	3.24	2.13
13	1.20	.81	.24	.20	.07	7.46	.20	1.95	1.61	10.5	* 3.54	2.31
14	* 1.30	.81	.22	* .18	.07	6.23	* .20	* 1.80	1.47	* 13.8	3.54	2.49
15	1.18	.80	.22	.18	.07	.83	.20	1.66	* 2.87	16.0	3.54	2.47
16	1.06	.79	.20	.16	.07	* .76	.20	1.52	3.42	* 15.1	3.77	* 2.62
17	.94	* .78	* .18	.15	.07	.68	.20	1.38	3.13	13.6	* 3.85	2.69
18	.82	.74	.18	.14	.07	.61	.20	1.23	2.73	12.2	4.18	2.25
19	.70	.71	.70	.13	* .06	.53	.78	* 1.09	2.60	10.7	3.61	2.25
20	* .58	.67	.77	.24	.06	.45	12.0	1.06	2.60	* 9.08	2.56	2.25
21	.59	.64	.60	* .18	.06	.37	15.3	1.03	2.93	7.95	2.53	2.25
22	.60	.60	.51	.14	.06	.30	12.7	.99	* 3.20	7.02	2.75	2.17
23	.61	.57	.43	.13	* .06	* .22	10.4	.96	3.20	* 6.15	3.03	2.49
24	.62	* .53	* .44	.11	.06	.22	8.56	.93	2.99	5.44	* 3.30	2.62
25	.64	.50	.44	.11	.06	.21	6.78	* .90	2.73	4.70	2.69	2.25
26	.65	* .47	.38	.11	* 5.23	.21	5.13	.90	3.62	4.26	2.62	2.22
27	* .66	.44	.38	.11	* 5.21	.20	3.96	1.09	4.53	* 4.01	2.82	2.29
28	.64	.42	.33	* .11	4.39	.20	3.76	1.09	4.28	3.03	3.25	2.43
29	.62	.31	.11	.81	.19	* 3.49	1.09	3.27	3.00	2.62	2.56	
30	.60	.31	.13	.26	.19	2.89	1.03	2.36	3.00	2.71	2.13	
31	.58	.31	.11	.11	.23	2.36	3.76		3.00		1.96	
Sum	24.13	18.47	5.66	17.84	83.56	117.13	64.52	83.21	189.24	96.31	77.59	
	Current Year 2003											
	Period 1962-2003											
	Extreme Gage Meters											
	Extreme-Cubic Meters per Second											
Month	High	Low	Day	High	Day	Low	Average	Total	Average	Maximum	Minimum	
Jan.	1.230	1.050	1	1.90	20	0.58	0.78	2,085	4,190	20,066	0	
Feb.	1.080	1.040	10	.84	28	.42	.66	1,596	2,942	12,251	0	
Mar.	1.090	.960	19	.93	!17	.18	.36	954	2,601	18,325	0	
April	1.010	.940	20	.40	!24	.11	.19	489	4,544	46,663	0	
May	1.940	.920	27	27.0	!19	.06	.58	1,541	4,290	36,113	0	
June	3.340	.800	10	154	9	.01	2.79	7,220	7,857	127,224	0	
July	2.640	.750	6	78.0	!1	.18	3.78	10,120	29,231	560,796	0	
Aug.	1.680	1.005	31	15.7	!25	.90	2.08	5,575	12,162	109,801	0	
Sept.	1.335	1.000	4	6.44	13	1.47	2.77	7,189	17,222	65,176	0	
Oct.	1.655	1.025	15	16.2	!2	1.85	6.10	16,350	16,336	83,799	0	
Nov.	1.245	1.080	19	5.06	!20	2.49	3.21	8,321	9,631	103,632	0	
Dec.	1.190	1.030	10	4.09	31	1.90	2.50	6,704	5,971	25,993	0	
Yearly	3.340	0.750		154		0.01	2.16	68,144	116,977	748,140	2,288	

* Discharge measurement(s) made on this day ! And other days

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

08-4575.00 RETURN FLOW TO THE RIO GRANDE FROM THE MAVERICK CANAL
AT MAVERICK POWER PLANT NEAR EAGLE PASS, TEXAS

DESCRIPTION: A part of the water diverted from the river into the Maverick Canal is returned to the Rio Grande through the hydroelectric power plant located on the left bank of the Rio Grande at latitude 28° 49'50", longitude 100° 33'10", about 14.5 kilometers north-northwest of Eagle Pass, Maverick County, Texas, and about 51.8 canal kilometers downstream from the point of diversion. The return enters the Rio Grande at river kilometer 816.

RECORDS: Based on records furnished by the Maverick County Water Control and Improvement District No. 1 (MCWCID No. 1) showing hourly discharge in cubic feet per second based on hourly manometer readings, through each turbine at the Central Power and Light Company hydroelectric power plant. The mean daily discharges computed from the manometer readings have been multiplied by a factor to make them agree with periodic current-meter measurements of flows made under stable flow conditions by hydrographers of the Commission and MCWCID No. 1. There were 59 current-meter measurements made during the year. 24 measurements were made by U.S. Section of the Commission and 35 measurements were made by MCWCID No. 1. Records available: 1949 through 2003.

REMARKS: This power plant began operating April 16, 1932 with hydroelectric power generating facilities for 12,000 kw. Because the September 1932 flood washed out the upper end of the Maverick Canal, this plant did not operate from September 2, 1932 until March 17, 1937. Since then it has operated continuously except for 44 days in 1953 when shortage of water prevented operation, and from June 30 through July 19 during flood of 1954, and while the canal was being repaired. The plant's operation is now governed by the amount of water released from Amistad Reservoir, which began operations on May 31, 1968.

			Average Flow in Cubic Meters per Second**											
Daily:	Max.	48.1	April 28, 1990				Min.	0				Occasionally		
Monthly:	Max.	44.4	April 1990				Min.	1.20				Dec. 1971		
Yearly:	Max.	36.7	1990				Min.	6.57				1972		

MEAN DAILY DISCHARGE IN CUBIC METERS PER SECOND 2003 --- ANNUAL AND PERIOD SUMMARY												
Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	17.2	17.4	17.3	12.6	* 32.8	25.9	12.8	16.1	27.5	16.9	18.4	18.8
2	* 17.3	17.5	17.2	11.6	34.0	25.1	* 12.1	15.3	25.2	* 16.9	18.2	18.3
3	18.7	17.5	19.9	* 11.7	34.8	24.7	* 11.9	13.5	21.6	17.1	18.0	18.4
4	19.0	16.5	18.9	11.4	35.0	24.4	12.7	1.40	* 21.9	17.0	17.9	* 18.1
5	19.5	* 15.4	* 18.4	11.8	35.2	* 22.5	13.6	7.00	* 22.6	17.0	17.8	17.9
6	19.7	15.2	17.8	12.9	* 33.4	22.2	16.5	19.0	23.6	16.7	19.0	17.6
7	18.4	18.3	17.3	14.1	31.2	23.9	19.8	* 20.5	22.9	16.0	* 19.5	17.4
8	* 17.6	20.8	17.0	13.0	31.3	23.1	28.4	21.1	22.6	15.9	19.4	* 17.4
9	* 18.4	21.1	17.2	* 12.6	* 31.9	* 21.9	21.6	* 22.2	17.1	19.2	17.4	
10	18.7	20.9	17.2	11.6	32.4	24.5	18.2	22.3	22.4	18.3	19.3	17.4
11	18.5	20.5	16.4	11.8	32.5	26.0	17.9	21.3	22.9	16.9	* 19.0	17.7
12	18.9	20.3	16.1	12.6	32.3	24.6	18.1	21.9	23.5	12.1	18.4	18.3
13	19.5	20.0	16.0	12.4	31.5	24.7	17.9	* 22.8	23.2	0	* 19.4	18.3
14	* 21.8	19.8	15.7	12.3	30.8	24.5	17.8	23.1	17.8	0	19.2	18.7
15	19.2	19.5	15.4	* 15.7	* 29.9	24.8	17.6	25.4	16.1	0	18.9	19.0
16	19.4	19.9	15.4	25.2	29.6	24.1	17.9	27.0	* 16.3	0	19.4	18.4
17	19.3	19.9	16.4	* 24.3	29.8	24.2	* 20.4	27.2	17.5	0	19.2	* 18.2
18	19.0	19.7	16.1	24.9	30.3	* 23.4	20.0	26.7	* 17.5	0	* 19.2	* 17.8
19	18.6	* 19.3	* 15.8	25.8	30.0	* 22.1	18.6	27.8	17.4	0	18.3	18.1
20	18.8	* 19.3	15.6	27.4	31.2	23.0	18.1	29.6	16.9	0	18.2	18.3
21	* 18.4	20.0	* 15.5	28.0	31.9	24.0	18.1	29.9	17.0	0	* 18.7	18.5
22	18.0	20.2	16.4	* 28.4	* 31.7	23.0	* 17.9	* 25.6	16.9	0	19.5	18.7
23	* 17.8	16.7	16.9	28.8	32.0	18.9	17.7	26.4	16.8	0	19.6	18.6
24	17.7	19.5	15.5	* 28.4	33.2	* 14.1	17.6	25.2	16.5	8.70	18.3	18.7
25	17.6	19.4	15.6	27.5	32.8	12.6	17.5	26.8	16.5	15.1	18.1	18.9
26	18.0	18.8	15.0	26.1	30.1	10.4	17.5	26.7	16.8	16.7	18.7	19.2
27	18.0	18.4	14.6	26.6	28.4	9.90	17.4	27.5	20.1	* 17.4	19.6	19.3
28	18.0	17.6	14.9	32.0	* 30.1	10.7	17.4	27.7	18.2	17.7	19.6	17.8
29	16.7		15.5	35.0	29.5	11.0	* 17.4	26.0	17.9	17.7	19.6	19.0
30	15.9		16.3	34.2	26.6	12.1	17.4	25.5	* 17.5	17.5	19.6	19.0
31	* 16.7		16.1		25.6		17.4	25.9		17.5		19.0
Sum	570.3	529.4	509.4	610.7	971.8	626.30	545.2	703.50	595.8	326.20	567.2	568.2

Current Year 2003						Period 1968-2003						
Extreme Gage Meters			Extreme-Cubic Meters per Second			Volume-Thousand Cubic Meters						
Month	High	Low	@ High Day	@ Low Day	Average	Total	Average	Maximum	Minimum			
Jan.			14	21.8	30	15.9	18.4	49,274	70,704	116,090	6,108	
Feb.			9	21.1	6	15.2	18.9	45,740	70,654	108,078	6,008	
Mar.			3	19.9	27	14.6	16.4	44,012	74,066	109,909	7,047	
April			29	35.0	4	11.4	20.4	52,764	73,466	115,145	5,305	
May			5	35.2	31	25.6	31.3	83,964	81,830	113,668	17,131	
June			11	26.0	27	9.90	20.9	54,112	72,903	102,070	8,162	
July			8	28.4	3	11.9	17.6	47,105	69,991	96,639	6,830	
Aug.			21	29.9	4	1.40	22.7	60,782	70,524	97,044	22,766	
Sept.			1	27.5	15	16.1	19.9	51,477	73,280	111,197	16,949	
Oct.			10	18.3	13	0	10.5	28,184	74,005	109,382	13,750	
Nov.			23	19.6	5	17.8	18.9	49,006	68,482	106,644	3,951	
Dec.			27	19.3	7	17.4	18.3	49,092	68,413	112,566	3,217	
Yearly			35.2	1	0	19.5	615,512	868,318	1,158,234	207,661		

* Discharge measurement(s) made on this day @ Mean daily

** Period 1968-2003

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

08-4577.00 RETURN FLOW TO THE RIO GRANDE
FROM THE MAVERICK IRRIGATION DISTRICT
ABOVE EAGLE PASS, TEXAS

DESCRIPTION: Part of the water diverted from the Rio Grande into the Maverick Canal is returned to the river through various drains and spillways of the irrigation system located between Maverick Diversion Dam and Eagle Pass, Maverick County Texas. These return flows are measured at gaging stations consisting of sharp-crested Cipolletti weirs or control structures equipped with continuous water-stage recorders located at Hughes Ranch, Lateral 1, Lateral 2 Spill, Canon Grande, Quemado Creek, Lateral 15 Spill, Houchin Spill, and Elm Creek; and a Parshall flume at the Lateral 2 Sand Trap Spill into Las Moras Creek immediately below the canal siphon. Gate leakage at Las Moras Creek which is measured periodically and mean daily discharges are determined by prorating between current-meter measurements.

RECORDS: Based on the weir discharge table and a continuous record of gage heights. All storm flow occurring at these stations is deducted from the records and is not shown below. Records available: April 1959 through 2003. Records computed by the U.S. Section of the Commission prior to 1996. Beginning in 1996, the Maverick County Irrigation District computes and provides the discharge data through the Texas Natural Resource Conservation Commission. Records prior to 1976 were published under the title "Return Flow to the Rio Grande from Maverick Canal-Maverick Dam to Eagle Pass, Texas".

REMARKS: In addition to the flows listed below, water from the Maverick Canal is returned to the Rio Grande in this reach at the Maverick Power Plant shown on a prior page of this bulletin.

EXTREME FLOWS FROM RECORDS:

			Average Flow in Cubic Meters per Second**				
Daily:	Max.	26.3	Sept. 29, 1975	Min.	0.07	Aug. 4 & 8, 1985	
Monthly:	Max.	4.36	June 1968	Min.	0.14	Sept. 1985	
Yearly:	Max.	3.57	1968	Min.	0.41		1985

MEAN DAILY DISCHARGE IN CUBIC METERS PER SECOND 2003 --- ANNUAL AND PERIOD SUMMARY												
Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.22	0.77	0.74	1.06	1.78	1.27	0.99	1.17	1.33	1.27	0.35	0.36
2	.70	.80	.74	1.10	1.77	1.27	1.00	1.17	1.37	1.24	.35	.37
3	.69	.80	.73	1.18	1.87	1.29	.99	1.17	1.28	1.33	.33	.39
4	.69	.82	.72	1.20	1.76	1.27	.99	.50	1.27	1.37	.33	.39
5	.69	.82	.72	1.27	1.70	1.28	1.06	.75	1.33	1.43	.39	.40
6	.69	.84	.74	1.29	1.65	1.35	1.13	1.41	1.38	1.47	.44	.37
7	.69	.82	.80	1.33	1.61	1.35	1.24	1.43	1.36	1.46	.40	.36
8	.69	.81	.76	1.42	1.71	1.33	1.23	1.40	1.35	1.50	.36	.35
9	.70	.80	.78	1.36	1.78	1.33	1.23	1.38	1.36	1.46	.36	.36
10	.76	.79	.82	1.40	1.69	1.37	1.23	1.42	1.39	1.56	.36	.41
11	.96	.79	.88	1.31	1.69	1.30	1.21	1.43	1.40	1.46	.35	.41
12	.90	.79	.87	1.31	1.62	1.24	1.19	1.41	1.44	1.03	.35	.42
13	.78	.81	.88	1.34	1.67	1.24	1.18	1.42	1.44	.47	.35	.44
14	.67	.83	.89	1.23	1.70	1.25	1.18	1.41	1.19	.43	.33	.44
15	.63	.83	.92	1.29	1.69	1.25	1.18	1.46	1.18	.42	.33	.43
16	.61	.82	.94	1.46	1.67	1.27	1.17	1.49	1.19	.41	.33	.43
17	.60	.79	.97	1.50	1.70	1.22	1.18	1.48	1.27	.39	.32	.42
18	.59	.79	.99	1.56	1.58	1.21	1.20	1.49	1.27	.39	.34	.42
19	.57	.84	.99	1.53	1.55	1.24	1.20	1.53	1.25	.39	.34	.44
20	.61	.81	.98	1.56	1.60	1.29	1.21	1.53	1.27	.37	.35	.44
21	.73	.80	.99	1.59	1.64	1.27	1.21	1.46	1.32	.37	.33	.44
22	.74	.80	1.01	1.51	1.58	1.24	1.22	1.28	1.36	.36	.32	.42
23	.82	.80	1.12	1.53	1.56	1.15	1.22	1.23	1.37	.37	.31	.41
24	.83	.80	1.19	1.53	1.67	1.11	1.21	1.28	1.33	.27	.31	.40
25	.83	.79	1.05	1.48	1.58	1.00	1.21	1.28	1.33	.29	.33	.40
26	.83	.77	1.04	1.46	1.49	.96	1.20	1.27	1.31	.34	.35	.39
27	.83	.78	1.07	1.52	1.50	1.00	1.20	1.30	1.38	.30	.35	.43
28	.85	.77	1.07	1.64	1.41	1.01	1.20	1.31	1.38	.30	.33	.40
29	.84		1.10	1.73	1.38	1.01	1.20	1.26	1.35	.29	.35	.38
30	.84		1.11	1.73	1.36	1.01	1.20	1.24	1.33	.29	.35	.36
31	.87		1.08		1.33		1.20	1.36		.31		.35
Sum	22.45	22.48	28.69	42.42	50.29	36.38	36.26	40.72	39.78	23.34	10.39	12.43
	Current Year 2003						Period 1968-2003					
Month	Extreme Gage Meters			Extreme-Cubic Meters per Second			Volume-Thousand Cubic Meters					
	High	Low	Day	@ High	@ Low	Average	Total	Average	Maximum	Minimum		
Jan.			11	0.96	1	0.22	0.72	1,940	3,230	9,424	1,097	
Feb.			16	.84	1	.77	.80	1,942	3,072	7,556	1,054	
Mar.			24	1.19	1	.72	.93	2,479	4,054	7,940	1,383	
April			29	1.73	1	1.06	1.41	3,665	4,319	9,615	1,016	
May			3	1.87	31	1.33	1.62	4,345	4,139	10,087	1,048	
June			10	1.37	26	.96	1.21	3,143	4,076	11,334	640	
July			7	1.24	1	.99	1.17	3,133	4,228	10,060	405	
Aug.			19	1.53	4	.50	1.31	3,518	4,320	11,423	486	
Sept.			12	1.44	15	1.18	1.33	3,437	3,737	9,472	356	
Oct.			10	1.56	24	.27	.75	2,017	3,775	8,097	1,337	
Nov.			6	.44	23	.31	.35	898	3,493	10,726	898	
Dec.			13	.44	8	.35	.40	1,074	3,143	7,122	860	
Yearly				1.87		0.22	1.00	31,591	45,586	112,857	12,834	
@ Mean daily			** Period 1968-2003									

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

08-4580.00 RIO GRANDE AT PIEDRAS NEGRAS, COAHUILA
AND EAGLE PASS, TEXAS

DESCRIPTION: Cableway, gravity well, water-stage recorder, and data collection platform located on the left bank at latitude 28° 42' 50", longitude 100° 30' 25", and river kilometer 800, 1.0 river kilometer upstream from the international highway bridge between Eagle Pass, Texas and Piedras Negras, Coahuila and 124 river kilometers downstream from Amistad Dam. The zero of the gage is 208.15 meters above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 55 discharge measurements during the year, 43 by the Mexican section, and 12 by the United States Section, and a continuous record of gage heights. Computations by shifting control methods. Records available: May 1900 through March 1914; August 1914 through April 1916; September 1916; September and October 1917; October 1918; September and October 1919; August and September 1920; June 1922; September, November, and December 1923; and 1924 through 2003.

Records prior to 1976 were published under the title "Rio Grande at Eagle Pass, Texas."

REMARKS: Reservoirs, diversions, and drainage returns modify the river flow at this station. The data collection platform is coupled to leased telephone circuits. This system is operated in cooperation with the National Weather Service.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 27,300 CMS, determined by slope-area calculations, on June 29, 1954, with a gage height of 16.31 meters. Well-authenticated information indicates the occurrence of a flood in June 1865 with an estimated discharge of 35,000 CMS and a gage height of 17.07 meters on the present gage, and also that these were the only floods since 1745 with flows greater than 23,400 CMS. Min. 0.69 CMS on June 22, 1953, with a gage height of 0.02 meters.

Average Flow in Cubic Meters per Second**

Daily:	Max.	3,810	Aug. 25, 1998	Min.	4.90	April 25, 1984
Monthly:	Max.	622	Sept. 1974	Min.	9.16	June 1969
Yearly:	Max.	147	1974	Min.	27.4	1972

MEAN DAILY DISCHARGE IN CUBIC METERS PER SECOND 2003 --- ANNUAL AND PERIOD SUMMARY												
Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	28.8	22.5	23.6	* 16.0	121 *	34.7	* 17.8	40.4	* 54.8	34.8	35.6	27.2
2	26.9	23.7	23.6	14.8	114 *	32.7	* 17.6	38.1	47.0	* 33.3	35.6	27.2
3	26.2	* 23.6	* 24.2	* 14.8	117	31.3	16.6	35.6	37.8	32.6	* 35.2	27.2
4	25.5	22.5	24.2	14.2	116	30.2	16.8	27.4	44.9	31.9	34.7	* 27.2
5	25.5	* 21.8	* 23.6	14.2	121	* 28.4	17.2	37.5	43.0	31.6	34.3	27.6
6	* 26.2	21.5	22.3	14.2	115	27.5	88.6	45.0	40.8	* 31.1	* 35.0	28.0
7	26.2	21.1	21.2	14.2	114	29.1	104	* 45.3	37.8	30.4	35.6	28.5
8	24.0	22.0	20.7	14.5	117	30.0	67.6	45.3	* 36.3	29.4	35.6	* 28.9
9	* 25.2	23.7	20.3	14.5	116	* 29.2	45.8	45.0	36.3	30.8	34.7	28.9
10	25.5	* 24.0	* 21.0	14.5	116	176	35.2	45.0	37.0	33.3	* 34.3	28.9
11	25.5	23.6	21.0	14.2	114	71.6	30.9	* 45.0	* 37.8	35.3	34.7	28.8
12	26.2	22.5	20.7	14.2	115 *	40.6	28.9	44.2	37.8	89.1	33.3	28.8
13	* 26.2	22.5	20.3	14.2	113	37.4	28.2	43.5	38.5	94.4	33.8	28.8
14	26.2	22.5	20.3	* 14.5	112	77.5	* 27.5	43.5	34.7	66.0	34.3	28.8
15	25.5	22.5	19.9	14.8	111	50.0	27.5	42.4	* 34.0	60.0	33.3	28.8
16	24.8	22.5	19.5	16.0	111	* 40.0	35.2	41.9	33.3	55.0	33.3	28.7
17	24.0	* 22.5	* 19.1	19.1	110	38.7	37.4	42.7	32.3	51.0	* 33.8	28.7
18	23.3	23.3	19.1	21.6	109	34.9	79.0	* 43.5	31.6	48.6	33.8	28.7
19	23.3	23.3	18.8	23.6	109 *	36.1	70.9	43.5	31.1	45.4	32.4	28.7
20	* 22.5	23.3	18.5	27.5	109	35.9	58.1	42.7	31.1	* 43.5	29.8	28.7
21	21.8	24.0	18.2	* 32.3	108	33.8	63.3	42.4	32.9	41.1	29.1	28.6
22	21.8	24.0	17.8	34.9	110	31.8	60.7	41.6	* 31.9	39.7	30.3	28.6
23	21.8	24.0	17.8	35.9	111	* 30.0	56.4	42.7	31.4	38.5	30.8	28.6
24	22.5	* 23.3	* 18.2	36.6	111	24.0	53.1	42.7	30.7	36.5	* 29.1	28.6
25	22.5	22.5	18.5	37.4	114	21.9	50.3	* 41.9	30.4	40.0	27.6	28.6
26	22.5	22.5	18.5	34.9	* 73.9	18.3	47.4	41.9	47.9	40.0	26.7	28.6
27	* 22.5	22.5	17.8	35.9	55.3	15.4	45.0	43.5	56.3	* 40.8	27.6	28.5
28	22.5	22.5	17.8	* 63.1	230	15.4	* 43.5	45.8	51.5	40.0	27.6	28.5
29	21.8		17.2	111	67.8	15.4	43.5	45.0	40.0	39.0	27.1	* 28.5
30	21.5		16.8	90.3	48.0	15.9	42.4	44.5	37.6	37.8	26.7	28.3
31	21.5		16.6	39.9		42.4	46.9			37.8		28.1
Sum		640.2	617.1	837.9	3,348.9	1,133.7		1,316.4		1,338.7		880.6
	750.2											
Current Year 2003 Period 1968-2003												
Extreme Gage Meters Extreme-Cubic Meters per Second Volume-Thousand Cubic Meters												
Month	High	Low	Day	High	Day	Low	Average	Total	Average	Maximum	Minimum	
Jan.	1.020	0.960	1	29.9	130	21.1	24.2	64,817	136,054	352,875	32,306	
Feb.	.980	.960	! 3	24.0	! 6	21.1	22.9	55,313	159,245	552,787	43,917	
Mar.	.975	.910	4	24.6	31	16.5	19.9	53,317	183,686	563,328	25,779	
April	1.655	.890	29	146	4	14.2	27.9	72,395	205,843	570,326	29,641	
May	2.500	1.065	28	354	31	37.2	108	289,345	286,787	726,365	44,643	
June	2.450	.895	10	341	27	14.8	37.8	97,952	226,654	594,778	23,750	
July	1.665	.905	6	148	3	16.0	45.1	120,856	218,906	961,969	32,194	
Aug.	1.160	.965	31	52.3	4	23.6	42.5	113,737	223,259	916,834	70,131	
Sept.	1.245	1.030	28	63.5	25	29.7	38.3	99,230	253,419	1,611,965	63,668	
Oct.	1.685	1.025	12	152	7	29.0	43.2	115,664	258,473	1,099,958	59,953	
Nov.	1.090	1.035	! 1	36.4	! 26	26.7	32.2	83,436	156,464	704,160	56,497	
Dec.	1.030	1.030	8	28.9	31	27.2	28.4	76,084	135,301	356,400	32,314	
Yearly	2.500	0.890		354		14.2	39.4	1,242,146	2,444,091	14,629,385	870,435	

* Discharge measurement(s) made on this day

! And other days

** Period 1968-2003

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

08-4581.50 RIO ESCONDIDO AT VILLA DE FUENTE, COAHUILA

DESCRIPTION: Cableway, gravity well, concrete control weir of 50 CMS capacity and water-stage recorder located on the right bank of the Rio Escondido on the outskirts of Villa de Fuente, Coahuila, at latitude 28° 40'05", longitude 100° 31'00", about 5.0 kilometers southwest of Piedras Negras, Coahuila, 8.0 river kilometers from the confluence with the Rio Grande, and 10.9 river kilometers downstream from the confluence of Rio San Antonio with Rio Escondido. Rio Escondido enters the Rio Grande at river kilometer 794, 5.0 river kilometers downstream from the international highway bridge between Eagle Pass, Texas and Piedras Negras, Coahuila. The zero of the gage is 218.96 meters above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 90 discharge measurements during the year, 86 by the Mexican Section and 4 by the U.S. Section, and a continuous record of gage heights. Records available: October 1932 through 2003.

REMARKS: Diversions and drainage returns modify the flow of this spring-fed stream at this station. Backwater from the Rio Grande reached an elevation of 222.48 meters during the flood of June 1954. Prior to November 1954, the gage well was located at the present cableway site. The weir was destroyed by a flood on September 24, 1964. On November 25, 1969, the concrete control weir was finished and placed in operation.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 680 CMS on June 29, 1936 with a stage of 224.61 meters above mean sea level. Min. frequently no flow.

		Average Flow in Cubic Meters per Second															
Daily:	Max.	371	Sept. 24, 1964											Min.	0	Occasionally	
Monthly:	Max.	23.4	Sept. 1964											Min.	0.01	Sept. 1965	
Yearly:	Max.	7.29	1987											Min.	0.07	1956	

MEAN DAILY DISCHARGE IN CUBIC METERS PER SECOND 2003 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	
1	0.34	0.57	0.44	0.18	0.06	0.08	0.08	0.33	* 0.40	0.22	0.72	1.16	
2	.34	.57	.45	.18	.06	* .08	.08	.32	.10	.22	.72	1.16	
3	.34	* .58	* .45	.18	* .05	.07	.08	.31	.09	.21	* .71	1.21	
4	.35	.57	.45	.18	.06	.07	.08	.30	9.06	.17	.70	1.18	
5	.35	.57	.45	.17	.06	.06	.08	.30	.64	.16	.70	1.18	
6	*	.35	.56	.45	.17	.05	.06	20.8	.29	.22	* .15	.69	1.31
7	.34	.55	.44	.17	.05	.06	1.77	.28	.18	.14	.69	1.32	
8	.34	.54	.44	.17	.05	.06	.70	.27	* .13	.14	.68	* 1.36	
9	.33	.54	.44	.17	.04	* .04	.44	.27	.13	.14	.68	1.36	
10	.33	* .53	* .44	.17	.04	48.8	.39	.26	.11	.15	* .67	1.36	
11	.32	.54	.40	.16	.04	1.66	.36	* .25	.10	2.95	.76	1.36	
12	.32	.55	.36	.16	* .04	.52	.30	.24	.10	2.90	.85	1.36	
13	* .31	.56	.32	.16	.04	.43	.26	.22	.10	1.22	* .94	1.35	
14	.31	.57	.28	* .16	.04	.84	* .23	* .21	.10	.82	1.03	1.35	
15	.31	.58	.24	.16	.04	.39	.20	.19	* .09	.64	1.12	* 1.46	
16	.31	.59	.20	.16	.04	* .39	.97	.18	.09	.57	1.21	1.46	
17	.32	* .60	* .16	.16	.04	.25	.42	.16	.08	.54	* 1.30	1.29	
18	.32	.58	.16	.16	.04	.22	.34	* .15	.08	.54	1.28	1.26	
19	.32	.55	.17	.16	* .04	* .20	.28	.15	.08	.54	1.27	1.26	
20	* .32	.53	.17	.16	.02	.18	.25	.16	.28	* .54	1.25	1.26	
21	.35	.50	.17	* .16	.02	.16	* .23	.16	.30	.54	1.24	1.26	
22	.38	.49	.17	.15	.02	.18	.21	.17	* .12	.57	1.22	* 1.24	
23	.41	.45	.18	.15	* .02	* .15	.16	.17	.11	.57	1.21	1.26	
24	.44	* .43	* .18	.14	.02	.13	.17	.18	.11	.60	* 1.19	1.21	
25	.47	.43	.18	.14	.02	.13	.19	* .18	.18	.60	1.21	1.21	
26	* .50	.44	.18	.13	* .21	.11	.21	.18	3.02	.60	1.22	1.21	
27	* .53	.44	.18	.13	1.90	.11	.23	.18	.58	* .58	1.24	1.23	
28	.54	.44	.18	* .12	.83	.11	* .24	.18	.31	.57	1.25	1.21	
29	.54	.18	.13	.14	.11	.22	.18	.24	.57	1.27	* 1.18		
30	.55	.18	.14	.09	.10	.19	.18	.18	.57	1.28	1.24		
31	.56	.18	.08	.08	.17	.62			.58			1.28	
Sum	11.84	14.85	8.87	4.73	4.25	55.75	30.33	7.22	17.35	19.31	30.30	39.54	

Current Year 2003 | Period 1932-2003

Month	Extreme Gage Meters			Extreme-Cubic Meters per Second			Volume-Thousand Cubic Meters				
	High	Low	Day	High	Low	Day	Average	Total	Average	Maximum	Minimum
Jan.	0.250	0.145	31	0.56	! 2	0.11	0.38	1,023	3,879	23,350	53.6
Feb.	.255	.200	17	.60	! 26	.30	.53	1,283	3,049	17,803	48.4
Mar.	.230	.115	! 2	.45	! 29	.06	.29	766	2,574	14,070	114
April	.170	.115	! 1	.18	! 1	.06	.16	409	2,725	27,069	100
May	.660	.075	27	7.38	! 24	.02	.14	367	4,226	31,418	190
June	2.480	.105	10	191	9	.04	1.86	4,817	3,344	31,888	74.3
July	1.655	.125	6	73.4	! 1	.08	.98	2,621	3,022	32,694	64.8
Aug.	.515	.100	31	3.95	! 25	.04	.23	624	4,281	37,135	0
Sept.	1.400	.130	4	48.0	! 17	.08	.58	1,499	5,800	60,665	21.6
Oct.	.880	.155	11	15.0	! 6	.14	.62	1,668	6,070	49,084	53.6
Nov.	.335	.240	! 26	1.30	! 4	.51	1.01	2,618	4,641	31,743	53.6
Dec.	.350	.320	15	1.46	! 1	1.16	1.28	3,416	4,112	27,140	82.9
Yearly	2.480	0.075		191		0.02	0.67	21,111	47,723	229,999	2,163

* Discharge measurement(s) made on this day ! And other days

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

08-4586.00 RETURN FLOW TO THE RIO GRANDE
FROM THE MAVERICK IRRIGATION DISTRICT
BELOW EAGLE PASS, TEXAS

DESCRIPTION: Part of the water diverted from the Rio Grande into the Maverick Canal is returned to the river through various drains and spillways of the irrigation system located between Eagle Pass, Texas and the El Indio Gaging Station. These return flows are measured at gaging stations consisting of sharp-crested Cipolletti weirs or control structures equipped with continuous water-stage recorders located at Canon Diablo, Lateral 50 Spill, Rosita Creek, Lateral 60-K Spill, Sauz Creek, Indio Creek, and Cuervo Creek.

RECORDS: Based on the weir discharge table, stable station control rating tables, and a continuous record of gage heights. All storm flow occurring at these stations is deducted from the records and is not shown below. Records available: April 1959 through 2003. Records computed by the U.S. Section of the Commission prior to 1996. Beginning in 1996, the Maverick County Irrigation District computes and provides the discharge data through the Texas Natural Resource Conservation Commission. Records prior to 1976 were published under the "Return Flow to the Rio Grande from Maverick Canal, Eagle Pass to San Antonio Crossing".

EXTREME FLOWS FROM RECORDS:

Average Flow in Cubic Meters per Second**

Daily:	Max.	9.91	July 5, 1968	Min.	0	Jan. 1, 2001
Monthly:	Max.	7.00	July 1968	Min.	0	Nov. 2003
Yearly:	Max.	5.10	1971	Min.	0.05	2001

MEAN DAILY DISCHARGE IN CUBIC METERS PER SECOND 2003 --- ANNUAL AND PERIOD SUMMARY

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

08-4587.00 RIO GRANDE NEAR EL INDIO, TEXAS
AND VILLA GUERRERO, COAHUILA

DESCRIPTION: Cableway, bubbler gage, concrete control weir, DCP with GOES high data rate telemetry and water-stage recorders (graphic and digital), located on the left bank at latitude 28° 20' 45", longitude 100° 18' 35", and river kilometer 741, 0.9 river kilometer downstream from Cuervo Creek, which marks the lower end of the Maverick County Water Control and Improvement District No. 1, 3.1 river kilometers upstream from Tovar Creek, 8.0 kilometers northeast of Villa Guerrero, Coahuila, about 18.5 kilometers south of El Indio, Maverick County, Texas, and 57.8 river kilometers downstream from the international highway bridge between Eagle Pass, Texas and Piedras Negras, Coahuila. The zero of the gage is 176.78 meters above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 24 current-meter measurements during the year and a continuous record of gage heights. Computations for high flows by shifting control methods. Low and medium flow computations based on a stable control weir rating curve defined by current-meter measurements. Records available: March, April, May, October, November, and December 1952 with some days missing; January through August 20, 1953; September 23, 1953 through June 14, 1954; and May 27, 1955 through 2003 with several days missing prior to September 1955. Records prior to 1976 were published under the title "Rio Grande at San Antonio Crossing near El Indio, Texas."

REMARKS: Reservoirs, diversions, and drainage returns modify the river flow at this station.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 25,800 CMS in June 1954, was determined by slope-area computation, with an elevation of 190.29 meters. Min. 1.54 CMS occurred on June 24, 1953 with an elevation of 177.38 meters at a station 518 meters upstream from the present site.

				Average Flow in Cubic Meters per Second**											
Daily:	Max.	4,310	August 25, 1998	Min.	9.26			June 29 & 30, 1972							
Monthly:	Max.	617	Sept. 1974	Min.	14.2			June 1969							
Yearly:	Max.	150	1974	Min.	35.0			1972							

MEAN DAILY DISCHARGE IN CUBIC METERS PER SECOND 2003 --- ANNUAL AND PERIOD SUMMARY												
Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	26.9	21.9	24.0	18.0	100	34.4	18.1	38.1	52.7	* 29.4	35.5	30.6
2	26.1	23.0	24.1	* 15.6	110	32.0	* 16.1	35.6	47.3	27.9	35.2	29.6
3	25.1	23.4	24.2	15.0	110	30.5	19.2	32.4	* 36.5	26.9	35.1	* 29.6
4	23.5	23.5	24.3	15.5	110	* 29.6	14.1	28.4	49.9	26.8	34.5	30.7
5	23.6	* 22.6	* 23.5	14.5	114	28.7	14.5	28.2	58.5	26.6	* 33.8	29.4
6	24.4	21.9	21.5	15.5	111	27.2	115	* 40.3	39.1	26.3	33.8	29.0
7	24.3	22.5	20.2	17.5	108	27.7	124	40.5	37.2	27.6	34.7	28.6
8	* 22.5	25.0	19.8	25.2	108 *	30.5	75.3	41.5	34.0	26.5	35.6	28.2
9	21.9	24.4	19.5	21.4	108	28.8	64.2	40.4	32.5	26.0	34.6	28.7
10	22.9	24.7	20.4	21.5	108	158	34.7	41.4	32.6	28.1	33.6	28.4
11	22.7	24.5	20.9	19.8	105	168	28.1	42.0	33.8	31.4	34.0	29.6
12	23.7	24.4	20.5	19.3	107	52.1	26.3	40.6	33.8	79.2	33.7	28.9
13	23.9	23.8	20.1	20.3	103	39.4	22.1	38.7	34.3	114	33.5	29.4
14	23.9	23.8	20.0	19.0	103	73.7	20.4	41.0	35.5	63.2	34.8	29.8
15	23.7	24.0	20.2	16.0	101	64.3	20.5	38.2	44.2	56.5	33.9	30.7
16	23.6	24.1	19.8	* 21.7	102	45.0	41.2	36.0	* 34.4	* 52.7	33.8	30.4
17	23.0	24.3	20.1	30.3	100	41.5	* 43.1	38.1	31.4	48.5	35.0	* 29.5
18	23.7	24.6	20.7	32.0	100	* 39.7	47.5	38.7	31.0	44.7	34.5	29.4
19	23.0	* 24.7	* 20.3	34.3	99.6	35.7	87.6	40.0	30.6	41.8	* 33.8	28.7
20	23.7	25.3	20.1	45.7	98.5	39.4	56.0	* 38.5	35.6	39.5	32.6	27.1
21	23.9	25.4	20.3	50.3	* 98.1	35.6	63.5	38.3	52.4	37.3	30.6	26.9
22	* 23.8	25.5	20.8	43.9	99.3	34.8	62.4	39.9	37.9	35.8	31.5	27.1
23	22.7	25.0	21.6	39.3	102	32.5	58.1	37.8	32.0	34.5	32.3	27.3
24	21.6	25.0	22.5	38.4	104	27.5	53.6	38.8	30.4	32.4	31.5	28.6
25	22.1	24.9	22.5	37.3	106	22.6	49.8	37.7	28.9	35.1	30.4	28.4
26	22.2	25.0	23.0	33.9	97.6	21.3	46.5	38.6	46.9	36.2	29.4	28.1
27	22.7	24.8	21.6	33.4	71.1	17.7	44.0	37.8	95.6	37.6	30.3	28.6
28	22.6	24.2	21.2	45.5	177	35.8	42.4	37.3	68.6	37.7	30.8	29.5
29	22.0		20.5	94.9	118	17.5	41.4	37.4	39.1	36.3	30.7	29.6
30	21.4		20.7	101	52.1	17.3	40.1	36.0	31.8	36.1	30.1	30.3
31	20.9		18.4		37.3		41.1	46.0		35.9		30.2
Sum	722.0	676.2	657.3	956.0	3,168.6	1,288.8	1,430.9	1,184.2	1,228.5	1,238.5	993.6	900.9
	Current Year 2003											
	Period 1968-2003											
	Extreme Gage Meters											
	Extreme-Cubic Meters per Second											
Month	High	Low	Day	High	Day	Low	Average	Total	Average	Maximum	Minimum	
Jan.	1.845	1.790	1	28.2	31	20.6	23.3	62,381	145,086	344,184	44,366	
Feb.	1.830	1.800	24	26.1	1	21.3	24.2	58,424	168,215	548,741	57,378	
Mar.	1.820	1.760	4	24.8	31	17.6	21.2	56,791	190,842	567,475	46,184	
April	2.365	1.715	30	134	2	12.5	31.9	82,598	215,432	584,928	46,115	
May	2.705	1.890	28	345	31	35.3	102	273,767	302,754	740,332	62,566	
June	2.715	1.715	10	367	27	15.5	43.0	111,352	241,399	681,150	36,768	
July	2.620	1.695	6	295	! 4	13.0	46.2	123,630	229,228	972,830	45,920	
Aug.	2.030	1.770	31	59.3	5	19.1	38.2	102,315	234,846	1,016,428	77,147	
Sept.	2.325	1.835	27	121	25	28.2	41.0	106,142	266,973	1,598,663	72,300	
Oct.	2.410	1.800	13	155	8	24.5	40.0	107,006	270,831	1,064,503</td		

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

08-4590.00 RIO GRANDE AT LAREDO, TEXAS
AND NUEVO LAREDO, TAMAULIPAS

DESCRIPTION: Bubbler gage and water-stage recorder (graphic and digital), DCP with GOES high data rate telemetry located at the Lincoln Juarez International Bridge on the left bank at latitude 27 30'05", longitude 99 30'13" and river kilometer 580. The zero of the gage is 107.12 meters above mean sea level U. S. C. & G. S. datum.

RECORDS: Based on 28 current-meter measurements during the year made from the bridge and a continuous record of gage heights. Computations by shifting control methods. Records available: May 1900 through 1913 (gage height records only); January through March 1914; May, June, and October 1914; September 1916; September and October 1917; October 1918; September and October 1919; August and September 1920; June, November, and December 1922; 1923 through March 2, 1989 at a station 1.3 kilometers downstream of present March 2, 1989 at a station 1.3 kilometers downstream of present site; March 3, 1989 through May 1990 at a station 0.5 kilometer upstream of present site; and June 1990 through 2003 at the present site.

REMARKS: Reservoirs, diversions, and drainage returns modify the river flow at this station.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 20,300 CMS on June 30, 1954 was determined by slope-area calculations, with a gage height of 18.44 meters at a site 0.5 kilometer upstream. Well authenticated information established the occurrence of a greater flood in 1865 with a gage height of 19.05 meters on a gage 1.3 kilometers downstream with a discharge of approximately 27,000 CMS. These were only floods since 1745 with flows greater than 17,000 CMS. Min. No flow several days in June and July 1953, and July 24, 1956.

Average Flow in Cubic Meters per Second**

Daily:	Max.	3,270	June 30, 1971	Min.	7.00	July 2, 1972
Monthly:	Max.	579	Sept. 1974	Min.	14.1	June 1969
Yearly:	Max.	152	1974	Min.	38.2	1972

MEAN DAILY DISCHARGE IN CUBIC METERS PER SECOND 2003 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	23.2	23.3	26.5	* 15.9	* 98.4	42.2	* 17.6	37.9	43.6	38.1	34.9	32.3
2	22.8	22.8	26.1	16.4	80.1	35.8	18.1	36.1	64.9	* 32.8	34.4	* 31.0
3	24.0	23.2	* 26.1	16.6	100	* 34.1	17.4	33.1	* 61.3	29.8	33.6	30.4
4	23.5	* 24.4	25.6	15.3	98.8	32.1	26.6	* 31.3	39.4	28.0	* 32.7	29.4
5	23.3	24.8	25.2	11.3	98.8	31.4	57.8	28.5	164 *	27.3	32.2	28.7
6	* 22.2	24.7	25.0	14.2	102	31.8	43.2	25.6	78.3	26.9	31.5	29.1
7	22.4	26.1	24.0	12.6	102	32.7	100	29.4	49.1	29.1	31.1	27.5
8	22.9	25.4	23.1	12.9	98.4	32.9	138	38.6	34.5	34.2	31.9	26.8
9	23.0	25.0	22.0	14.1	99.2	32.2	85.5	37.9	29.3	31.2	33.0	26.1
10	21.8	25.9	21.6	18.9	103	78.7	84.7	39.0	26.7	35.7	33.5	25.4
11	22.5	25.6	21.0	19.5	104	221	45.2	38.2	25.8	32.3	32.0	24.8
12	24.6	25.3	21.1	17.9	102	172 *	32.8	39.8	32.8	677 *	31.9	24.7
13	23.3	25.4	21.6	16.8	104	58.0	28.5	39.8	28.8	823	32.2	25.0
14	23.7	25.1	21.0	* 14.2	103	56.8	* 26.6	44.5	34.9	399	32.0	24.3
15	24.1	26.4	20.2	15.6	104 *	60.2	24.6	52.9	54.9	115	30.8	24.1
16	24.4	24.7	20.1	15.7	101	* 72.4	24.6	45.5	43.2	57.5	31.9	24.1
17	23.9	23.7	20.2	14.4	102	45.9	29.3	37.1	* 34.0	57.6	31.3	* 24.2
18	24.3	* 23.8	* 19.2	16.0	103	36.4	50.0	* 36.2	30.6	51.4	36.1	24.5
19	23.6	24.4	18.7	25.5	103	34.1	34.6	37.4	33.5	47.0	32.5	24.5
20	24.2	25.2	18.7	29.2	105	30.9	71.2	37.2	30.7	43.7	* 31.4	24.7
21	* 24.1	25.5	18.0	32.0	101	29.0	52.6	37.4	34.1	41.1	31.2	24.3
22	25.0	25.3	17.5	46.4	102	30.0	49.2	35.4	51.6	* 39.3	31.0	23.8
23	24.7	25.6	17.5	43.7	102	27.4	52.4	36.9	48.7	37.7	30.8	23.5
24	24.8	26.1	16.9	37.3	105	26.6	49.9	47.5	35.3	36.4	31.8	24.0
25	24.4	26.1	17.6	34.9	104	25.5	47.0	39.3	30.3	34.5	32.5	24.5
26	23.8	26.0	22.1	33.6	107	22.6	43.8	37.8	28.3	34.6	32.5	25.3
27	24.1	26.0	18.9	32.5	108	19.8	41.1	37.1	62.1	36.4	32.0	25.4
28	24.5	26.2	18.4	29.6	94.4	18.7	39.5	36.9	217	36.7	31.4	25.0
29	24.8		17.6	32.3	185	22.9	40.8	37.4	105	36.4	30.9	25.5
30	24.4		17.0	92.8	138	30.2	45.4	38.8	50.2	35.5	32.5	25.6
31	23.7		15.6		55.0		38.3	38.9		35.2		25.6
Sum	736.0	702.0	644.1	748.1	3,213.1	1,424.3	1,456.3	1,169.4	1,602.9	3,020.4	967.5	804.1

□ Current Year 2003 □ Period 1968-2003

Current Year 2003

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Current Year 2003

Period 1988-2003

Month	Extreme Gage Meters		Extreme-Cubic Meters per Second				Volume-Thousand Cubic Meters				
	High	Low	Day	High	Day	Low	Average	Total	Average	Maximum	Minimum
Jan.	0.640	0.585	18	25.6	10	20.8	23.7	63,590	149,242	352,918	44,185
Feb.	.665	.595	15	29.3	2	22.3	25.1	60,653	174,283	555,809	48,383
Mar.	.615	.490	1	26.7	31	15.0	20.8	55,650	196,111	609,638	45,757
April	1.295	.450	30	118	5	9.26	24.9	64,636	219,297	640,138	43,304
May	2.130	.840	29	279	31	46.9	104	277,612	324,738	817,599	110,911
June	2.320	.475	11	314	29	15.4	47.5	123,060	273,425	857,878	36,616
July	1.660	.475	7	194	1	16.3	47.0	125,824	237,612	1,034,298	39,804
Aug.	.960	.545	24	68.0	7	22.9	37.7	101,036	242,604	979,770	67,452
Sept.	2.105	.625	28	285	11	25.5	53.4	138,491	281,172	1,500,845	77,026
Oct.	6.110	.600	12	1,080	12	21.6	97.4	260,963	306,255	1,180,391	50,993
Nov.	.765	.660	18	37.9	28	30.0	32.3	83,592	172,162	723,165	53,153
Dec.	.685	.615	1	33.3	122	23.3	25.9	69,474	145,205	379,380	48,064
Yearly	6.110	0.450		1,080		9.26	45.2	1,424,581	2,722,106	4,799,562	1,209,723

* Discharge measurement(s) made on this day

! And other days

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WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

08-4597.00 RIO SALADO NEAR LAS TORTILLAS, TAMAULIPAS

DESCRIPTION: Cableway, control weir with notch opening of 72 CMS capacity, gravity well, and water-stage recorder located on the right bank at latitude 26° 50' 10", longitude 99° 33' 50", 3 river kilometers downstream from the confluence of Rio Sabinas with Rio Salado, 10 kilometers southeast of the town of Las Tortillas, Tamaulipas, and 39.8 river kilometers from the confluence with the Rio Grande. This stream enters the Rio Grande at river kilometer 482, 39.8 river kilometers upstream from Falcon Dam. The zero of the gage is 99.28 meters above mean sea level, U. S. C. & G. S. datum. Since July 1996, the actual measurements and record of gage heights have been obtained at the Nuevo Laredo to Reynosa Highway Bridge approximately 39.7 kilometers downstream from the gaging station near Las Tortillas. The zero of the gage at the Bridge is at mean sea level, U.S.C. and G.S. datum.

RECORDS: Based on 10 discharge measurements during the year and a continuous record of gage heights. Computations by shifting control methods. Records available: September 9, 1953 through 2003. Records are also available for a station at old Cd. Guerrero, 30 kilometers downstream, from 1900 through 1913 and 1923 through September 8, 1953.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 1,840 CMS on September 16, 1971, with a gage height of 12.31 meters. Min. frequently no flow. Extreme flow data for the Rio Salado at Cd. Guerrero prior to September 8, 1953 may be found in previous bulletins.

Average Flow in Cubic Meters per Second**									
Daily:	Max.	1,780	Sept. 16, 1971		Min.	0	Frequently		
Monthly:	Max.	384	Sept. 1971		Min.	0	Frequently		
Yearly:	Max.	93.9	1971		Min.	1.08	1994		

MEAN DAILY DISCHARGE IN CUBIC METERS PER SECOND 2003 --- ANNUAL AND PERIOD SUMMARY												
Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1.10	1.25	1.37	0.39	0.12	9.49	0	0	0.41	23.4	17.8	3.92
2	1.12	1.25	1.37	.38	.10	* 4.70	0	0	16.0	18.4	17.0	3.82
3	1.12	1.25	1.37	.35	.08	2.36	0	0	* 9.90	15.5	15.9	3.75
4	1.12	1.25	1.34	.35	.05	1.93	0	0	4.24	12.8	13.9	3.75
5	1.03	1.30	1.25	.38	.02	1.91	0	.03	7.79	10.9	12.5	3.56
6	.94	1.24	1.25	.38	0	3.96	0	.07	11.6	9.22	11.6	3.50
7	1.12	1.28	1.22	.39	0	29.0	0	.08	23.2	7.91	10.8	3.50
8	1.12	1.40	1.12	.36	0	27.1	0	.08	34.6	7.96	9.97	3.31
9	1.12	1.28	1.09	.36	0	18.9	0	.08	19.6	12.6	9.05	3.06
10	1.44	1.22	1.07	.48	0	5.24	0	.08	5.80	9.23	8.61	2.91
11	1.65	1.37	1.19	.44	0	2.14	0	.10	3.82	6.42	8.00	2.91
12	1.75	1.37	1.12	.34	0	1.84	0	.10	10.6	51.9	7.30	3.00
13	1.75	1.37	1.12	.34	0	1.58	0	.09	5.76	223 *	9.90	2.91
14	1.65	1.37	1.12	.34	0	1.53	0	.08	4.93	317 *	14.7	2.78
15	1.62	2.53	1.12	.32	0	1.52	0	.06	24.0	311	13.9	2.75
16	1.58	1.76	1.12	.32	0	.88	0	2.64	15.9	325	11.4	2.46
17	1.44	1.42	.97	.31	0	.66	0	.90	7.46	319	10.5	2.36
18	1.40	1.67	.84	.28	0	1.50	0	.09	9.75	285	10.5	2.31
19	1.28	1.77	.71	.19	0	1.17	0	0	11.0	233	10.5	2.18
20	1.34	1.65	.69	.24	0	.69	0	0	18.6	147	9.98	2.19
21	1.37	1.49	.69	.35	0	.46	0	0	23.1	51.4	9.30	2.00
22	1.37	1.28	.59	.32	0	.41	0	0	23.1	39.5	8.59	2.00
23	1.37	1.18	.50	.30	0	.29	0	0	* 23.1	34.9	8.07	1.99
24	1.37	1.39	.50	.24	0	.19	0	0	23.4	31.8	7.39	1.97
25	1.34	1.52	.56	.22	0	.09	0	0	23.5	29.3	7.05	1.97
26	1.25	1.42	.56	.26	0	.04	0	0	36.3	28.4	6.40	1.97
27	1.25	1.37	.48	.29	0	0	0	0	40.5	32.1	5.77	1.97
28	1.25	1.37	.45	.30	* 37.7	0	0	0	40.5	26.5	4.94	1.95
29	1.25		.44	.28	105 *	0	0	0	43.4	23.4	4.76	1.92
30	1.25		.40	.19	115 *	0	0	0	* 35.9	21.4	4.44	1.91
31	1.25		.40		* 25.5	0	0	0	19.4			1.90
Sum	41.01	40.02	9.69	283.57	119.58	0	4.48	557.76	2,684.34	300.52	82.48	
Current Year 2003												Period 1953-2003
Extreme Gage Meters												Volume-Thousand Cubic Meters
Month	High	Low	Day	High	Day	Low	Average	Total	Average	Maximum	Minimum	
Jan.	89.200	89.130	111	1.75	6	0.87	1.32	3,543	9,488	73,777	0	
Feb.	89.380	89.150	15	4.00	6	1.12	1.43	3,458	7,560	82,495	0	
Mar.	89.170	89.080	1	1.37	129	.40	.90	2,421	5,200	36,628	0	
April	89.100	89.000	10	.50	19	0	.32	837	12,443	250,373	0	
May	91.630	89.000	29	125	4	0	9.15	24,500	27,580	447,500	0	
June	90.170	89.000	7	37.0	26	0	3.99	10,332	29,741	304,451	0	
July	89.000	89.000	1	0	1	0	0	0	27,960	544,635	0	
Aug.	89.430	89.000	16	5.55	1	0	.14	387	21,142	259,070	0	
Sept.	90.370	89.000	29	47.0	1	0	18.6	48,190	84,420	996,183	2,373	
Oct.	95.440	89.430	14	329	11	5.55	86.6	231,927	55,009	679,329	136	
Nov.	89.770	89.390	1	18.3	30	4.25	10.0	25,965	25,612	416,863	0	
Dec.	89.380	89.260	1	4.00	31	1.90	2.66	7,126	15,381	217,244	0	
Yearly	95.440	89.000	329	1	0	11.4	358,686	321,536	12,961,050	34,122		

* Discharge measurement(s) made on this day

! And other days

** Period September 1953-2003

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

08-4613.00 RIO GRANDE BELOW FALCON DAM NEAR FALCON, TEXAS
AND NUEVA CD. GUERRERO, TAMAULIPAS

DESCRIPTION: The discharges reported below represent water measured as it leaves Falcon Reservoir through turbine penstocks, bypass valves, spillway gates, and leakage. Falcon Dam, astride the Rio Grande, is located at latitude 26°33'35", longitude 99°10'00", and river kilometer 442; about 11.3 kilometers southwest of Falcon, Starr County, Texas and 139 river kilometers downstream from the old international highway bridge between Laredo, Texas and Nuevo Laredo, Tamaulipas.

A gravity well and graphic water-stage recorder located 4.1 river kilometers downstream and a cableway located 1.6 kilometers farther downstream are used to measure the flow of this station at times when spillway gates are in operation.

RECORDS: Based on daily simplex meter records of releases through the six turbines, established rating curves for the four hollow-jet bypass valves, estimates of gate leakage, and measurements of flow at the cableway during spillway gate operations, and DCP with GOES high data rate telemetry. During 2003 there were 16 current-meter measurements made at the cableway by the United States Section. Records available: 1958 through 2003. Records are also available from December 17, 1952 through 1957 for a station at Chapeno, 4.1 kilometers downstream, where discharges included arroyo inflow below Falcon Dam. This inflow is eliminated from the records reported below.

REMARKS: Computation of flow was made jointly by the United States and Mexican Sections of the Commission from a consolidation of the basic data gathered by each Section incident to the international operation of Falcon Reservoir.

EXTREME FLOWS FROM RECORDS:** Momentary: Max. 2,340 CMS on September 18, 1971. Min. 0.04 CMS on March 24 and 25, 1957 (at Chapeno gaging station).

Average Flow in Cubic Meters per Second**											
Daily:	Max.	2,160	Sept. 18, 1971		Min.	0.04			March 24 & 25, 1957		
Monthly:	Max.	920	Oct. 1958		Min.	0.67			Nov. 1973		
Yearly:	Max.	196	1958		Min.	39.6			1997		

MEAN DAILY DISCHARGE IN CUBIC METERS PER SECOND 2003 --- ANNUAL AND PERIOD SUMMARY												
Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	15.5	17.3	15.5	50.3	255	55.4	35.3	50.0	20.4	8.50	7.50	17.5
2	18.7	17.1	13.5	50.7	262 *	55.3	35.1	53.7	13.0	8.50	7.50	15.4
3	25.3	17.0	13.5	51.2	243	65.5	35.3	55.1	10.5	10.0	7.50	13.5
4	30.5	15.4	13.5	51.1	233	60.2	25.5	55.2	17.3	12.0	7.50	11.6
5	27.9	14.0	12.0	68.4	230 *	50.8	18.0	56.3	15.5	13.5	7.50	10.5
6	25.5	14.0	10.5	66.8	227	45.7	18.0	57.0	15.5	14.5	7.50	13.5
7	25.5	14.0	15.4	62.8	215	50.5	14.0	54.5	17.0	13.0	10.6	16.7
8	21.2	13.0	20.4	69.8	225	53.2	14.0	* 55.0	18.4	* 10.5	7.50	16.5
9	* 18.6	14.1	20.4	* 60.2	220 *	53.6	16.0	58.0	18.3	9.00	7.50	17.6
10	19.8	15.9	20.4	56.4	224	57.1	15.5	55.2	18.4	8.50	7.00	16.7
11	23.3	16.1	18.0	62.2	214	57.3	* 12.5	50.7	18.4	8.50	6.50	13.4
12	23.1	15.0	* 14.0	86.2	215	52.4	10.5	61.1	11.9	6.50	* 6.50	13.1
13	16.7	* 15.0	12.5	89.6	142	47.3	9.00	53.1	5.50	2.50	6.50	16.8
14	11.5	15.0	16.2	95.0	124	51.8	10.0	40.2	9.00	2.50	6.50	16.9
15	18.5	13.0	22.6	127	136	47.0	14.0	23.0	16.3	2.50	6.50	16.8
16	15.9	11.0	22.2	147	143	30.3	17.2	10.5	* 9.90	4.50	6.50	18.4
17	13.5	11.0	13.5	190	119	28.2	21.8	5.50	8.50	4.50	6.50	16.0
18	18.5	21.0	11.5	190	106	23.3	27.8	10.5	8.50	6.50	6.50	* 13.5
19	18.5	20.9	8.50	216	107	* 20.4	33.1	21.5	7.40	6.50	6.50	15.1
20	18.6	18.4	8.50	208	114	20.3	29.8	13.0	5.50	6.50	7.00	16.7
21	19.8	21.3	12.2	207	114	35.5	33.3	14.2	5.50	6.50	7.50	16.6
22	21.3	25.4	17.1	204	113	35.5	30.5	24.9	5.50	6.50	10.5	16.3
23	17.5	25.3	18.3	200 *	113	37.6	34.2	26.4	6.50	6.50	10.5	13.5
24	13.5	26.7	18.3	210	113	45.5	35.7	20.6	7.50	6.50	9.50	11.5
25	18.3	31.8	17.1	230	113	50.5	38.4	29.0	7.50	6.50	8.50	12.5
26	22.4	17.9	16.7	235	107	64.1	46.3	29.2	8.00	6.50	11.0	16.4
27	20.3	17.3	19.9	237	95.8	68.2	47.1	20.3	10.5	6.50	13.5	20.5
28	17.5	19.0	25.9	230	88.3	64.4	47.0	24.1	8.50	6.50	13.5	19.3
29	14.0		30.8	256	82.8	60.2	45.7	24.1	8.50	6.50	15.5	23.4
30	15.6		32.6	257	67.8	43.4	46.0	21.5	8.50	6.50	17.3	27.1
31	* 17.3		32.4		57.7		47.8	26.5		7.00		25.7
Sum	604.1	492.9	543.90	4,264.7	4,819.4	1,430.5	864.40	1,099.90	341.70	231.00	260.40	509.0

Current Year 2003						Period 1954-2003					
Extreme Gage Meters			Extreme-Cubic Meters per Second			Volume-Thousand Cubic Meters					
Month	High	Low	@ High Day	@ Low Day	Average	Total	Average	Maximum	Minimum		
Jan.			4	30.5	14	11.5	19.5	52,194	238,564	664,934	12,802
Feb.			25	31.8	16	11.0	17.6	42,587	166,841	453,153	13,796
Mar.			30	32.6	19	8.50	17.5	46,993	160,973	487,987	27,900
April			30	257	1	50.3	142	368,470	395,477	861,235	14,541
May			2	262	31	57.7	155	416,396	439,980	882,527	26,611
June			27	68.2	20	20.3	47.7	123,595	295,625	830,101	24,322
July			31	47.8	13	9.00	27.9	74,684	189,815	482,117	15,837
Aug.			12	61.1	17	5.50	35.5	95,031	245,318	1,823,919	74,233
Sept.			1	20.4	13	5.50	11.4	29,523	172,825	1,333,232	1,761
Oct.			6	14.5	13	2.50	7.45	19,958	228,566	2,463,696	2,383
Nov.			30	17.3	11	6.50	8.68	22,499	121,674	1,391,291	1,727
Dec.			30	27.1	5	10.5	16.4	43,978	109,513	573,923	10,807
Yearly			262		2.50	42.4	1,335,908	2,765,171	6,188,898	1,247,998	

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

08-4620.00 RIO ALAMO AT CD. MIER, TAMAULIPAS

DESCRIPTION: Cableway, reinforced concrete weir of 5 CMS capacity, gravity well, and water-stage recorder located on the right bank at a point called "El Paso del Cantaro," latitude 26°27'02", longitude 99°09'06", about 1.0 kilometer north of Cd. Mier, Tamaulipas, and 8.0 river kilometers from the confluence with the Rio Grande. This stream enters the Rio Grande at river kilometer 422, 20.0 river kilometers downstream from Falcon Dam. The weir is located about 91 meters downstream from the recorder. The zero of the gage is at mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on the weir discharge table at low flows, 21 current meter measurements during the year, and a continuous record of gage heights. High flow computations by shifting control methods. Records available: July 1923 through 2003.

REMARKS: Reservoirs and irrigation diversions modify the flow of this spring-fed stream at this station. Las Blancas Dam, located upstream from the station, was completed in 2001. This Dam diverts water to Marte Gomez Reservoir in the Rio San Juan Basin for additional conservation storage. On June 11, 1952, the zero of the gage was raised 0.40 meters to make it coincide with the weir crest elevation. Prior to January 1, 1969, the zero of the gage was 57.41 meters above mean sea level, U. S. C. & G. S. datum.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 4,100 CMS on September 11, 1948, with a stage of 67.64 meters above mean sea level. Min. periods of no flow occur frequently.

		Average Flow in Cubic Meters per Second												
Daily:	Max.	2,470	Sept. 11, 1948										Min. 0	Frequently
Monthly:	Max.	207	Sept. 1967										Min. 0	Frequently
Yearly:	Max.	23.7	1967										Min. 0.21	2000

MEAN DAILY DISCHARGE IN CUBIC METERS PER SECOND 2003 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.		
1	1.20	0	1.30	0.50	0.80	0.80	* 0.50	0.60	* 3.10	0.65	0.80	0.80		
2	* 1.20	0	1.15	.58	.80	.80	.50	.60	* 1.97	.60	.80	.80		
3	* 1.20	0	* .55	.60	.80	.80	2.23	.60	1.21	.60	.80	.80		
4	1.20	0	.46	.60	.80	.80	4.78	.60	.65	.60	.80	.80		
5	1.20	0	* .46	.60	.80	.80	.73	.60	1.70	.60	.80	.80		
6	1.28	0	.46	.60	.80	.80	.82	.60	3.26	.60	.80	.80		
7	1.38	0	.46	.60	.78	.80	.78	.60	.90	.64	.80	.80		
8	* 1.18	0	.46	2.08	.70	.80	.70	.60	.71	.85	.80	.80		
9	* 1.20	0	.46	1.13	.70	.80	.70	.60	.68	.58	.80	.78		
10	1.20	0	.46	.60	.70	.80	.62	.60	.62	.68	.80	.70		
11	1.20	0	.46	.60	.70	.80	.65	.60	.60	.62	.80	.72		
12	1.20	0	.42	.60	.79	.80	.60	.60	3.75	10.8	.80	.80		
13	1.20	0	.40	.60	1.15	.80	.60	.60	1.88	34.7	1.31	.72		
14	1.20	0	.40	.60	.74	.80	.60	2.57	.87	201 *	1.21	.75		
15	1.20	0	.40	.60	.70	.80	.60	.74	.80	* 94.9	1.00	.90		
16	1.20	0	.40	.60	.70	* 1.32	.60	.71	.95	* 22.1	.91	.90		
17	1.20	0	.40	.60	.70	1.58	.60	.65	.79	* 13.4	.84	.92		
18	1.20	0	.40	.60	.70	1.60	.60	.65	.79	* 4.02	.80	1.00		
19	1.20	0	.40	.60	.81	1.60	.60	.65	7.20	1.86	.80	1.00		
20	1.20	0	.40	.60	.99	1.60	.60	.65	2.82	1.02	.80	1.00		
21	1.20	* .78	.40	.60	.80	1.60	.60	.66	15.0	1.00	.80	1.00		
22	1.20	1.20	.40	.60	.80	1.48	.60	.64	* 7.93	1.00	.80	1.00		
23	1.20	1.20	.40	.60	.80	.68	.60	.74	1.64	.98	.80	1.00		
24	1.20	* 1.20	.40	.60	.80	.60	.60	.72	1.12	.90	.80	1.00		
25	1.20	1.20	.40	.60	.80	.60	.60	.62	.92	.90	.80	1.00		
26	1.20	* 1.65	.40	.60	.80	.60	.60	.60	.82	.98	.80	1.00		
27	1.20	* 1.42	.40	.75	.80	.60	.60	.60	.80	1.05	.80	1.00		
28	1.20	* 1.30	.38	.80	.80	.60	.60	.60	.80	.90	.80	1.00		
29	1.20	.30	.80	.80	.80	.60	.60	.60	.80	.90	.80	1.00		
30	1.14	.30	.80	.80	.80	.60	.58	.60	.80	.88	.80	1.00		
31	0	.30	.80	.80	.50	1.26			.80			1.00		
Sum		9.95		20.64		27.66		24.89		22.06		401.11		27.59
	36.18		14.38		24.46					65.88		25.27		

Current Year 2003

Period 1924-2003

Month	Extreme Gage Meters			Extreme-Cubic Meters per Second			Volume-Thousand Cubic Meters				
	High	Low	Day	High	Low	Average	Total	Average	Maximum	Minimum	
Jan.	57.750	57.400	7	5.75	31	0	1.17	3,126	1,995	43,079	0
Feb.	57.630	57.400	21	2.75	1	0	.36	860	2,485	65,959	0
Mar.	57.630	57.450	1	1.30	28	.30	.46	1,242	2,018	24,456	0
April	57.690	57.450	8	4.25	1	.50	.69	1,783	5,304	44,665	0
May	57.520	57.470	19	1.15	7	.70	.79	2,113	9,084	168,990	0
June	57.520	57.420	17	1.60	23	.20	.92	2,390	10,394	102,675	0
July	58.140	57.410	3	20.0	1	.10	.80	2,150	6,336	76,780	0
Aug.	57.880	57.410	14	9.25	1	.10	.71	1,906	17,138	253,778	0
Sept.	58.310	57.410	21	25.0	9	.10	.20	5,692	38,028	535,810	167
Oct.	61.060	57.420	14	232	1	.20	12.9	34,656	17,091	238,962	0
Nov.	57.620	57.480	13	2.42	1	.80	.84	2,183	3,561	31,041	0
Dec.	57.640	57.470	17	2.88	9	.70	.89	2,384	2,503	19,714	0
Yearly	61.060	57.400		232		0	1.92	60,485	115,937	747,096	6,479

* Discharge measurement(s) made on this day ! And other days

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

08-4642.00 RIO SAN JUAN AT CAMARGO, TAMAULIPAS

DESCRIPTION: Cableway, gravity well, and water-stage recorder located on the left bank opposite Camargo, Tamaulipas at latitude 26° 18' 40", longitude 98° 50' 15", 5.0 river kilometers from the confluence with the Rio Grande, and 15.0 river kilometers downstream from Marte R. Gomez Dam. This stream enters the Rio Grande at river kilometer 384; 6.0 river kilometers upstream from the Rio Grande at Rio Grande City gaging station, 58.1 river kilometers downstream from Falcon Dam. The zero of the gage is at mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on a continuous record of gage heights. Computations by shifting control methods. Discharge prorated between measurements during times of extremely low flow. Records available: 1954 through 2003.

REMARKS: Except for storm inflow, diversions, and drainage returns below Marte R. Gomez Dam, the flow at this station is controlled by spills from Marte R. Gomez Reservoir and leakage through the dam. Backwater from the Rio Grande frequently reaches this station. Prior to July 1, 1968 the zero of the gage was 39.76 meters above mean sea level, U. S. C. & G. S. datum.

EXTREME FLOWS FROM RECORDS: Momentary - May 3, 270 CMS on September 25, 1967 with a stage of 52.57 meters above mean sea

EXTREME FLOWS FROM RECORDS: Momentary: Max. 3,270 CMS on September 25, 1967 with a stage of 52.57 meters above mean sea level. Min. no flow occurs frequently. Average Flow in Cubic Meters per Second

			Average Flow in Cubic Meters per Second		
Daily:	Max.	3,250	Sept. 25, 1967	Min.	0
Monthly:	Max.	894	Sept. 1967	Min.	0
Yearly:	Max.	113	1967	Min.	0.02

MEAN DAILY DISCHARGE IN CUBIC METERS PER SECOND 2003 --- ANNUAL AND PERIOD SUMMARY

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

08-4645.00 CONTRIBUTIONS TO THE RIO GRANDE FROM
THE LOWER RIO SAN JUAN IRRIGATION DISTRICT
FALCON DAM TO RIO GRANDE CITY

DESCRIPTION: The Lower Rio San Juan Irrigation District in Mexico lies along the Rio Grande between Cd. Miguel Aleman and Rio Bravo, Tamaulipas and is irrigated with water impounded by Marte R. Gomez Dam situated on the Rio San Juan 20.0 river kilometers upstream from the confluence with the Rio Grande. The Rio San Juan enters the Rio Grande at river kilometer 384. Drain water from this irrigation district enters the Rio Grande between Falcon Dam and the Rio Grande City Gaging Station through the Rio San Juan channel, Rancherias Drain, and Los Fresnos Drain; and between the Rio Grande City Station and Anzalduas Dam through Puertecitos, Los Indios, Huizache, and Morillo Drains. Only the portion of water reaching the Rio Grande via drains located upstream from the Rio Grande City Gaging Station is shown below. Drain water reaching the Rio Grande through the Rio San Juan channel is included in the Rio San Juan tabulation.

RECORDS: Drain water determination based on staff gage readings during the year by the Mexican Section and the weir discharge tables. Water entering the Rio Grande through the Rio San Juan Channel, composed of spills and leakage from Marte R. Gomez Dam, storm inflow and drainage below the dam, is measured at the Rio San Juan Gaging Station at Camargo, Tamaulipas, 5.0 river kilometers upstream from the confluence with the Rio Grande. All storm water measured at these two drains was deducted and is not included in the tabulation below. Records available: 1953 through 2003. Records prior to 1976 include Rio San Juan flow.

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

08-4646.00 DIVERSIONS FROM THE RIO GRANDE
UNITED STATES SIDE, FALCON DAM TO RIO GRANDE CITY

Beginning June 1971, the Texas Water Rights Commission, now the Texas Commission on Environmental Quality, assumed control of the United States portion of the water in Falcon Reservoir and in the Rio Grande below Falcon Dam, the disposition of such waters being made by its Rio Grande Watermaster. Previous to that, since June 1956, such waters had been under the jurisdiction of the 93rd District Court of Texas administered by its Special Watermaster.

During 2003, 1,537 irrigable hectares and several towns and rural homes were allotted Rio Grande water in the river reach between Falcon Dam and the Rio Grande City gaging station. Such irrigable area was 0.6% of the total irrigable area below Falcon Dam allotted Rio Grande water.

The total diversion during 2003 in this river reach was 9,592 TCM, or 1.2% of the total water diverted from the Rio Grande below Falcon Dam. Records of diversions in this river reach were determined by means of flow meters. More than one crop per year is often grown on parts of this land.

Records prior to 1976 were published under the title "Diversions from the Rio Grande, United States Side-Falcon Dam to Fort Ringgold."

EXTREME FLOWS FROM RECORDS:

		Average Flow in Cubic Meters per Second													
Daily:	Max.	4.59		May 1, 1998									Min. 0		Occasionally
Monthly:	Max.	1.58		April 1984									Min. 0.06		March 1957
Yearly:	Max.	0.65		1989									Min. 0.20		1968

MEAN DAILY DISCHARGE IN CUBIC METERS PER SECOND 2003 --- ANNUAL AND PERIOD SUMMARY												
Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.18	0.23	0.21	0.50	0.64	0.28	0.42	0.34	0.28	0.24	0.29	0.27
2	.31	.23	.09	.50	.70	.30	.42	.34	.28	.24	.27	.26
3	.38	.23	.06	.56	.76	.35	.27	.36	.28	.27	.27	.28
4	.40	.25	.12	.54	.61	.34	.27	.36	.25	.30	.30	.28
5	.29	.44	.26	.57	.61	.33	.27	.44	.25	.34	.40	.30
6	.31	.43	.26	.54	.63	.27	.27	.44	.25	.35	.53	.32
7	.33	.26	.27	.61	.58	.27	.27	.36	.25	.38	.53	.29
8	.33	.23	.12	.55	.60	.26	.27	.36	.25	.49	.27	.29
9	.28	.19	.07	.36	.62	.34	.27	.41	.25	.51	.23	.30
10	.28	.21	.22	.36	.72	.33	.27	.43	.25	.57	.24	.27
11	.29	.25	.22	.47	.49	.34	.27	.39	.30	.43	.24	.29
12	.26	.37	.21	.40	.51	.34	.27	.45	.30	.37	.24	.27
13	.26	.41	.27	.31	.54	.37	.29	.39	.25	.30	.24	.24
14	.28	.32	.25	.53	.53	.35	.29	.43	.25	.25	.24	.27
15	.28	.20	.10	.55	.60	.32	.29	.38	.25	.22	.24	.27
16	.27	.18	.08	.50	.59	.44	.34	.38	.25	.22	.24	.27
17	.29	.22	.08	.53	.56	.48	.29	.32	.25	.27	.24	.27
18	.27	.34	.23	.52	.52	.32	.28	.40	.25	.29	.29	.28
19	.19	.44	.37	.52	.39	.31	.28	.40	.25	.34	.33	.27
20	.23	.37	.33	.20	.41	.30	.29	.35	.25	.34	.31	.27
21	.25	.41	.26	.52	.39	.28	.29	.34	.24	.29	.31	.28
22	.26	.26	.29	.56	.51	.27	.42	.34	.24	.36	.33	.32
23	.25	.05	.11	.54	.70	.29	.29	.34	.24	.34	.29	.34
24	.19	.07	.33	.62	.58	.29	.28	.32	.24	.40	.29	.31
25	.19	.05	.33	.63	.40	.30	.29	.34	.24	.40	.27	.29
26	0	.24	.29	.56	.37	.29	.28	.35	.25	0	.25	.29
27	0	.28	.34	.18	.36	.27	.10	.40	.24	0	.25	.29
28	0	.24	.33	.23	.33	.27	.10	.39	0	0	.25	0
29	0	.27	.22	.34	0	0	.10	.38	0	0	.25	0
30	0	.17	.24	.36	0	0	.10	.34	0	0	.11	0
31	0	.17	.36	0	0	.10	0	0	0	0	0	0
Sum		7.40	6.71	13.92	16.11	8.90	8.24	11.27	6.88	8.51	8.54	7.68
	6.85		6.71									
Current Year 2003												
Average Rainfall** Millimeters				Extreme-Cubic Meters per Second				Volume-Thousand Cubic Meters				
Month	2003	1960-2003	Day	@ High	@ Low	Average	Total	Average	Maximum	Minimum		
Jan.	20	23	4	0.40	!26	0	0.22	592	919	1,828	196	
Feb.	29	26	! 5	.44	!23	.05	.26	639	1,122	2,198	275	
Mar.	19	15	19	.37	3	.06	.22	580	1,495	2,558	549	
April	21	34	25	.63	27	.18	.46	1,203	1,611	4,088	440	
May	44	61	3	.76	18	.32	.52	1,392	1,286	3,237	260	
June	24	65	17	.48	!29	0	.30	769	1,108	3,217	258	
July	56	38	! 1	.42	!27	.10	.27	712	939	1,897	343	
Aug.	50	53	12	.45	31	0	.36	974	905	1,798	343	
Sept.	252	116	!11	.30	!28	0	.23	594	741	1,745	220	
Oct.	219	53	10	.57	!26	0	.27	735	1,051	2,109	448	
Nov.	75	30	! 6	.53	30	.11	.28	738	760	1,793	260	
Dec.	1	22	23	.34	!29	0	.25	664	714	1,490	179	
Yearly	810	536		0.76		0	0.30	9,592	12,651	20,497	6,154	
@ Mean daily			!	And other days			** United States side - average of several stations in the reach					

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

08-4647.00 RIO GRANDE AT RIO GRANDE CITY, TEXAS
NEAR CAMARGO, TAMAULIPAS

DESCRIPTION: Cableway, bubbler gage, water-stage recorders (graphic and digital), and DCP with GOES high data rate telemetry, located on the left bank at Fort Ringgold, latitude 26° 22' 00", longitude 98° 48' 10", and river kilometer 378; about 1.6 kilometers downstream from Rio Grande City, Texas, and 6.0 river kilometers downstream from Rio San Juan. The zero of the gage is 30.48 meters above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 25 current-meter measurements during the year and a continuous record of gage heights. Computations by shifting control methods. Records available: January 1955 through 2003. Records prior to 1976 were published under the title "Rio Grande at Fort Ringgold, Rio Grande City, Texas." Records composed of the addition of discharges of the Rio Grande at Roma, Texas and the Rio San Juan at Santa Rosalia, Tamaulipas are available for May, June, and October 1914; September 1916; September and October 1917; October 1918; September and October 1919; August and September 1920; June 1922; September 1923; and 1924 through 1931. Records are also available for the station "Rio Grande near Rio Grande City" 4.8 kilometers downstream, for 1932 through 1954.

REMARKS: Reservoirs, diversions, and drainage returns modify the river flow at this station. Except for tributary inflows and intervening diversions below Falcon Dam, flow at this station is controlled largely by releases from Falcon Reservoir, 64.1 river kilometers upstream.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 6,230 CMS on September 22 and 23, 1967, with a gage height of 18.71 meters.

Min. no flow occurred several days in June and July 1953.

Average Flow in Cubic Meters per Second**

Daily:	Max.	5,860	Sept. 23, 1967		Min.	0.36	March 5, 1985
Monthly:	Max.	1,400	Oct. 1958		Min.	6.66	March 1957
Yearly:	Max.	259	1958		Min.	43.3	1997

MEAN DAILY DISCHARGE IN CUBIC METERS PER SECOND 2003 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	
1	11.1	17.7	20.0	* 34.5	252 *	59.7	* 39.9	* 47.9	34.3	* 9.07	39.4	* 22.2	
2	* 14.7	17.9	17.3	52.7	254	* 58.2	33.2	50.2	* 45.0	9.39	37.6	21.4	
3	21.5	17.1	13.5	54.8	277	60.3	39.5	52.7	24.6	10.5	* 36.7	19.4	
4	28.7	* 18.2	* 13.2	53.5	243	67.2	72.7	53.5	15.7	11.2	34.7	15.4	
5	34.8	18.0	12.5	56.5	233	59.7	35.1	53.4	20.3	13.3	32.6	14.0	
6	32.2	13.2	11.7	70.2	227	53.5	24.1	53.5	35.7	15.3	30.2	12.4	
7	28.4	13.0	10.2	66.6	217	49.6	19.6	54.2	19.4	17.3	27.8	12.9	
8	28.0	15.8	12.6	67.6	224	54.3	15.3	50.9	12.9	18.1	31.3	18.4	
9	24.2	15.4	19.9	68.4	226	49.3	14.0	53.0	15.7	16.4	30.3	19.0	
10	20.3	14.5	20.0	60.0	225	52.7	16.3	54.5	16.6	13.8	28.3	19.4	
11	22.5	17.7	20.4	55.9	223	57.8	16.6	52.4	16.1	12.1	27.4	19.6	
12	26.1	17.1	19.2	64.5	219	57.8	14.7	49.5	29.3	104	26.3	18.0	
13	26.6	16.7	14.9	85.3	196	52.1	12.5	57.0	30.0	226	29.9	14.3	
14	20.3	15.7	13.1	88.5	127 *	50.9	12.5	* 49.5	10.9	219 *	46.1	18.2	
15	* 11.9	16.7	15.1	104 *	126	52.5	* 11.3	37.4	* 9.55	272	45.9	20.7	
16	15.6	15.6	21.7	131	133	44.4	16.1	20.1	21.3	230 *	41.9	* 19.9	
17	16.7	13.3	21.9	166	138	29.6	20.9	13.2	13.2	186	36.5	23.7	
18	12.7	12.5	14.8	196	111	* 25.9	26.4	6.93	9.94	144	* 34.1	22.9	
19	17.2	* 19.0	* 10.5	210	99.6	21.3	34.8	4.48	18.7	117	32.6	18.0	
20	18.6	21.2	8.73	226	109	19.1	40.3	14.2	56.1	99.0	25.9	18.6	
21	19.1	19.5	7.79	217	110	20.2	35.9	15.2	39.8	84.7	23.3	26.7	
22	20.3	20.6	8.58	217	109	36.7	39.1	10.8	78.9	74.7	23.0	29.3	
23	22.5	28.6	14.1	211	108	37.1	33.1	22.9	33.8	67.8	21.9	29.0	
24	19.2	28.0	16.9	208	109	40.7	37.7	27.7	23.4	60.9	22.6	31.3	
25	13.3	28.8	17.7	222	110	47.2	38.7	18.4	13.9	56.0	19.1	31.4	
26	16.7	34.6	15.4	246	109	54.9	41.7	28.1	8.66	56.2	17.3	33.6	
27	24.8	22.1	13.3	242	105	64.9	49.4	30.4	7.79	65.0	17.5	36.2	
28	23.2	19.8	16.2	242	97.6	68.2	49.8	19.0	7.88	53.9	24.3	41.1	
29	19.1		22.9	238	99.4	62.8	49.2	21.1	9.20	48.7	20.6	42.2	
30	13.7		28.4	254	83.6	59.1	47.3	24.2	8.76	45.8	19.8	44.1	
31	13.8		31.1		65.6		46.8	19.8		43.2		45.8	
Sum		528.3		4,209.0		1,467.7		984.5	1,066.11		2,400.36		759.1
	637.8		503.60		4,965.8				687.38		884.9		

Current Year 2003

Period 1954-2003

Month	Extreme Gage Meters			Extreme-Cubic Meters per Second			Volume-Thousand Cubic Meters				
	High	Low	Day	High	Low	Average	Total	Average	Maximum	Minimum	
Jan.	8.025	7.690	5	37.7	1	10.1	20.6	55,106	249,889	628,819	20,625
Feb.	8.010	7.705	26	38.8	18	12.2	18.9	45,645	190,281	464,530	31,488
Mar.	7.980	7.625	31	31.9	22	7.14	16.2	43,511	166,122	470,016	17,787
April	9.365	7.965	30	255	1	30.5	140	363,658	374,522	878,161	20,156
May	9.495	8.245	3	283	31	62.1	160	429,045	444,446	850,281	45,271
June	8.320	7.865	28	68.8	20	17.7	48.9	126,809	329,610	811,943	97,028
July	8.530	7.700	4	98.6	15	10.5	31.8	85,061	213,554	707,768	27,479
Aug.	8.295	7.635	13	58.4	19	4.25	34.4	92,112	263,924	1,853,522	30,778
Sept.	8.515	7.675	22	93.3	27	7.58	22.9	59,390	316,462	3,346,077	52,327
Oct.	9.685	7.690	15	286	1	8.95	77.4	207,391	330,618	3,758,177	37,009
Nov.	8.125	7.785	14	51.0	27	15.8	29.5	76,455	153,540	1,778,975	28,132
Dec.	8.060	7.715	21	46.1	7	12.0	24.5	65,586	132,486	665,515	39,434
Yearly	9.685	7.625		286		4.25	52.3	1,649,769	3,165,454	8,165,042	1,364,475

* Discharge measurement(s) made on this day

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

08-4683.00 CONTRIBUTIONS TO THE RIO GRANDE FROM
THE LOWER RIO SAN JUAN IRRIGATION DISTRICT
RIO GRANDE CITY TO ANZALDUAS DAM

DESCRIPTION: The Lower Rio San Juan Irrigation District in Mexico lies along the Rio Grande between Cd. Miguel Aleman and Rio Bravo, Tamaulipas and is irrigated with water impounded by Marte R. Gomez Dam situated on the Rio San Juan 20.0 river kilometers upstream from the confluence with the Rio Grande. The Rio San Juan enters the Rio Grande at river kilometer 384. Drain water from this irrigation district enters the Rio Grande between Falcon Dam and the Rio Grande City Gaging Station through the Rio San Juan channel, Rancherias Drain, and Los Fresnos Drain; and between the Rio Grande City Station and Anzalduas Dam through Puertecitos, Los Indios, Huizache, and Morillo Drains. Only the portion of drain water from this irrigation district reaching the Rio Grande via drains located downstream from Rio Grande City Gaging Station is shown below.

RECORDS: Drain water reaching the Rio Grande through Morillo Drain was determined by hourly staff gage readings and the weir discharge table, and through Puertecitos and Los Indios Drains by prorating between frequent current meter measurements. All storm water measured at these drains was deducted and is not included in the tabulation below. Records available: 1953 through 2003.

REMARKS: Since July 9, 1969, some water has been diverted from Morillo Drain directly to the Gulf via the Morillo Drain Diversion Canal to reduce the salinity of Rio Grande waters.

MEAN DAILY DISCHARGE IN CUBIC METERS PER SECOND 2003 --- ANNUAL AND PERIOD SUMMARY												
Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	7.67	9.76	5.44	* 5.90	4.10	10.5	* 6.11	7.92	6.91	10.1	12.9	* 0.40
2	* 7.10	9.17	5.86	5.90	5.53	10.1	6.76	7.84	* 7.67	10.3	12.0	3.00
3	7.38	* 11.2	* 6.08	5.90	6.15	9.82	7.28	7.94	7.40	* 10.4	11.7	7.00
4	8.33	11.2	6.06	4.40	6.43	10.0	* 19.5	7.94	7.45	10.7	11.6	8.30
5	8.50	10.9	5.79	* 5.10	5.96	9.94	19.9	7.91	8.54	10.5	11.9	* 8.20
6	* 8.06	* 11.2	* 5.89	5.30	5.69	9.09	10.2	7.74	7.72	9.80	12.0	8.10
7	7.29	* 11.2	5.64	5.96	4.71	8.06	* 6.55	7.75	5.47	10.1	11.8	8.00
8	7.88	11.2	5.42	10.6	5.06	7.90	5.96	7.65	4.93	10.3	10.1	7.90
9	* 8.26	11.0	5.41	13.6	4.97	7.74	5.51	7.75	4.80	* 9.84	8.02	8.10
10	8.59	* 6.40	5.31	9.49	4.87	7.13	5.30	7.75	4.71	9.42	6.50	8.10
11	8.69	7.00	* 5.20	7.06	4.87	7.26	5.40	8.15	* 4.73	9.94	5.89	* 6.40
12	9.82	7.70	5.20	5.74	5.24	7.86	5.30	8.14	* 11.2	15.4	5.88	5.10
13	10.0	* 6.44	* 4.80	5.65	5.99	7.89	5.30	8.44	12.6	16.7	7.67	5.00
14	* 10.3	6.88	* 3.30	5.51	6.58	11.5	5.30	9.16	8.80	* 14.7	7.25	4.80
15	10.6	7.08	3.42	5.49	5.90	12.5	5.40	8.46	7.22	11.1	6.44	4.90
16	10.7	7.23	3.70	5.92	5.71	* 11.0	5.20	8.40	6.57	7.43	5.93	5.10
17	* 10.6	* 7.45	4.74	5.78	5.76	14.1	5.10	8.38	5.93	10.8	5.61	4.10
18	10.8	* 7.55	* 4.46	5.82	6.13	* 13.4	5.20	8.23	6.02	9.22	4.90	5.84
19	11.3	7.85	3.71	6.69	6.18	10.2	5.70	7.44	22.6	7.25	4.70	7.08
20	10.1	* 8.03	* 3.58	7.13	* 6.58	8.47	6.10	6.43	19.8	8.82	4.60	7.08
21	* 10.2	7.98	3.42	6.92	6.88	7.32	* 6.10	5.46	16.0	* 11.7	4.60	5.43
22	13.3	7.97	3.30	6.76	6.30	6.62	6.70	5.29	* 12.5	12.1	4.60	2.00
23	13.5	7.16	3.20	6.68	6.11	6.28	7.20	5.26	12.1	12.4	4.60	1.76
24	* 13.7	* 7.16	3.10	6.84	9.08	6.21	7.30	5.20	11.7	12.4	1.70	1.54
25	13.9	7.24	* 3.10	7.00	11.0	6.19	7.30	5.20	9.79	12.4	1.30	1.37
26	14.0	6.48	3.20	7.02	* 12.3	6.06	7.51	5.20	8.68	12.5	.80	.70
27	13.8	* 1.81	3.20	6.94	11.2	6.02	7.98	5.20	8.94	* 12.6	.50	.75
28	* 13.8	* 4.64	3.30	7.13	11.2	6.12	8.01	5.20	8.96	14.7	.40	1.42
29	13.7		3.60	7.82	11.2	6.22	8.12	5.20	8.23	16.1	.40	.75
30	* 13.1		4.40	6.74	12.3	6.32	8.19	5.90	7.41	16.1	.40	* .14
31	11.6		5.50		11.1		8.11	6.50		* 16.3		.07
Sum	326.57	226.88	202.79	221.08	257.82	229.59	219.03	275.38	362.12	186.69	138.43	
	Current Year 2003						Period 1954-2003					
Month	Extreme Gage Meters			Extreme-Cubic Meters per Second			Volume-Thousand Cubic Meters					
	High	Low	Day	@ High	@ Day	Average	Total	Average	Maximum	Minimum		
Jan.			26	14.0	2	7.10	10.5	28,216	3,320	28,216	0	
Feb.		!	2	11.2	27	1.81	8.10	19,602	3,673	19,602	0	
Mar.			3	6.08	!24	3.10	4.46	11,952	2,511	11,952	0	
April			9	13.6	4	4.40	6.76	17,521	4,226	17,521	0	
May			!26	12.3	1	4.10	7.13	19,101	9,195	37,225	0	
June			17	14.1	27	6.02	8.59	22,276	8,578	106,021	0	
July			5	19.9	17	5.10	7.41	19,837	4,667	60,172	0	
Aug.			14	9.16	!24	5.20	7.07	18,924	2,608	18,924	0	
Sept.			19	22.6	10	4.71	9.18	23,793	2,803	23,793	0	
Oct.			13	16.7	19	7.25	11.7	31,287	3,236	31,287	0	
Nov.			1	12.9	!28	.40	6.22	16,130	2,120	16,130	0	
Dec.			4	8.30	31	.07	4.47	11,960	2,692	41,991	0	
Yearly				22.6		0.07	7.63	240,599	49,629	240,599	0	

* Discharge measurement(s) made on this day @ Mean daily ! And other days

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

08-4684.00 DIVERSIONS FROM THE RIO GRANDE
UNITED STATES SIDE, RIO GRANDE CITY TO ANZALDUAS DAM

Beginning June 1971, the Texas Water Rights Commission, now the Texas Commission on Environmental Quality, assumed control of the United States portion of the water in Falcon Reservoir and in the Rio Grande below Falcon Dam, the disposition of such waters being made by its Rio Grande Watermaster. Previous to that, since June 1956, such waters had been under the jurisdiction of the 93rd District Court of Texas administered by its Special Watermaster.

During 2003, 65,829 irrigable hectares and several towns and rural homes were allotted Rio Grande water in the river between the gaging station at Rio Grande City and Anzalduas Dam. Such irrigable area was 24.8% of the total irrigable area below Falcon Dam allotted Rio Grande water.

The total diversion during 2003 in this river reach was 138,743 TCM, or 18.0% of the total water diverted from the Rio Grande below Falcon Dam. Records of diversions in this river reach were determined by means of flowmeters and by a deflection meter developed by the International Boundary and Water Commission. More than one crop per year is often grown on parts of this land.

EXTREME FLOWS FROM RECORDS:

		Average Flow in Cubic Meters per Second										
Daily:	Max.	34.6	June 21, 1960		Min.	0						Occasionally
Monthly:	Max.	28.6	June 1960		Min.	0.29						March 1957
Yearly:	Max.	13.5	1989		Min.	4.40						2003

MEAN DAILY DISCHARGE IN CUBIC METERS PER SECOND 2003 --- ANNUAL AND PERIOD SUMMARY												
Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1.91	2.27	1.74	7.07	7.29	8.21	7.28	7.34	3.18	2.07	1.09	5.00
2	5.23	2.11	2.20	7.30	7.17	9.67	6.90	5.81	3.25	3.86	.39	4.80
3	4.75	6.31	2.78	8.46	5.95	8.18	5.38	7.26	1.69	3.38	2.49	4.15
4	2.07	6.16	2.61	6.37	6.43	9.84	2.55	11.1	1.16	2.71	3.05	3.83
5	2.85	6.26	1.00	4.22	8.48	10.4	2.58	11.3	2.48	2.86	2.00	4.37
6	5.13	6.00	.59	5.43	9.64	6.77	3.57	11.0	1.38	3.85	2.11	3.28
7	6.61	4.00	1.65	9.93	9.93	3.84	4.36	11.1	1.04	3.52	2.61	2.74
8	6.60	2.09	.32	8.08	10.6	4.27	4.09	9.03	3.91	3.24	2.42	3.64
9	5.36	1.92	1.67	8.10	8.95	9.94	3.22	7.60	3.91	2.50	1.64	3.59
10	5.19	2.96	.47	6.17	8.33	10.3	3.41	9.31	3.50	3.25	1.87	4.78
11	2.98	2.49	.40	5.24	8.21	9.77	2.85	13.1	3.78	1.67	1.78	4.12
12	2.51	4.01	1.41	3.46	11.6	10.7	3.34	12.3	3.21	1.56	1.53	2.93
13	4.62	2.45	2.35	4.59	13.1	7.89	2.28	11.5	2.11	2.69	1.37	1.92
14	4.37	3.16	1.52	9.38	12.1	4.56	1.73	10.1	1.48	1.07	1.56	2.33
15	2.35	1.96	2.32	8.77	12.7	5.38	1.31	4.02	1.78	0	.85	3.59
16	3.19	1.78	2.53	8.16	10.5	6.42	1.54	.56	.86	.65	.40	3.40
17	2.93	3.33	2.74	7.95	7.81	5.27	5.80	.78	5.52	1.08	2.89	3.51
18	1.75	4.41	2.79	5.36	8.08	4.32	4.71	3.74	4.30	.07	1.79	3.55
19	1.63	5.29	2.87	3.79	11.1	2.00	3.14	.04	.99	.39	1.79	3.42
20	3.00	4.72	1.15	5.00	12.5	3.06	3.79	1.47	.77	3.10	2.16	2.86
21	4.28	3.42	2.31	6.66	12.3	2.34	7.10	2.38	.51	1.83	2.91	2.44
22	4.74	2.57	1.65	6.96	12.5	2.55	7.04	3.56	1.24	2.52	.64	4.45
23	4.99	2.71	2.17	6.42	10.6	4.82	7.72	2.16	2.72	2.61	.47	3.31
24	3.95	3.51	4.20	7.05	8.89	3.38	9.66	3.11	.90	3.29	3.10	1.45
25	2.60	3.45	5.24	5.82	9.70	5.93	7.81	4.87	2.25	2.70	2.96	.58
26	2.69	3.06	5.99	5.06	11.3	6.83	4.64	4.18	1.54	0	2.28	3.45
27	5.76	2.85	5.40	4.74	9.87	6.07	6.06	4.98	.01	0	1.22	2.92
28	6.19	3.25	4.13	6.33	9.88	4.64	10.2	5.66	0	0	2.13	0
29	4.29	2.30	6.97	10.9	5.16	10.5	4.33	0	0	0	4.24	0
30	4.05	3.08	7.22	12.3	5.53	10.3	2.83	0	0	0	2.37	0
31	2.92	6.66	9.09	9.85	0	0	0	0	0	0	0	0
Sum	98.50	78.24	196.06	307.80	188.04	164.71	186.52	59.47	56.47	58.11	90.41	
	121.49											
	Current Year 2003						Period 1960-2003					
Month	Average Rainfall** Millimeters	Extreme-Cubic Meters per Second	Volume-Thousand Cubic Meters									
Month	2003	1960-2003	@ High Day	@ Low Day	Average	Total	Average	Maximum	Minimum			
Jan.	14	27	7	6.61	19	1,63	3.92	10,497	15,659	35,458	2,479	
Feb.	29	27	3	6.31	16	1,78	3.52	8,510	17,382	47,610	4,040	
Mar.	29	19	31	6.66	8	.32	2.52	6,760	26,973	51,495	6,760	
April	23	31	7	9.93	12	3.46	6.54	16,940	30,886	53,085	4,216	
May	16	61	13	13.1	3	5.95	9.93	26,594	27,104	55,732	3,919	
June	31	67	12	10.7	19	2.00	6.27	16,247	26,196	73,847	6,181	
July	55	36	29	10.5	15	1.31	5.31	14,231	26,273	57,262	6,973	
Aug.	51	51	11	13.1	31	0	6.02	16,115	27,108	44,751	8,469	
Sept.	184	96	17	5.52	28	0	1.98	5,138	17,487	42,873	5,102	
Oct.	229	63	2	3.86	15	0	1.82	4,879	20,805	46,570	4,358	
Nov.	38	26	29	4.24	2	.39	1.94	5,021	18,230	45,171	3,614	
Dec.	0	25	1	5.00	28	0	2.92	7,811	14,670	30,837	3,091	
Yearly	699	529	13.1	0	4.40	138,743	268,773	424,806	138,743			

@ Mean daily

! And other days

** United States side - average of several stations in the reach

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

08-4686.00 DIVERSIONS FROM THE RIO GRANDE
ANZALDUAS CANAL NEAR REYNOSA, TAMAULIPAS

DESCRIPTION: Cableway, gravity well, and water-stage recorder located on the left bank at latitude 26°07'50", longitude 98°20'10", 0.8 canal kilometer from the canal intake, and about 8.0 kilometers northwest of Reynosa, Tamaulipas. The canal intake is immediately upstream from Anzalduas Dam at river kilometer 274, 165 river kilometers downstream from Falcon Dam. The zero of the gage is 26.31 meters above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 76 discharge measurements during the year and a continuous record of gage heights. Computations by shifting control methods. Records available: 1952 through 2003.

REMARKS: Diversions to this canal are for irrigation and domestic use in Mexico. For area irrigated during the year see the tabulation under the heading of "Drainage Basin and Irrigated Areas" in this Bulletin. Flow at this canal station is affected by backwater from the operation of canal gates 19 kilometers and 37 kilometers below the canal intake.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 310 CMS on June 2, 1957, with a gage height of 4.88 meters. Min. no flow occurs frequently.

Average Flow in Cubic Meters per Second									
Daily:	Max.	279	May 17, 1994		Min.	0	Frequently		
Monthly:	Max.	215	April 1993		Min.	0	Several months		
Yearly:	Max.	60.3	1989		Min.	1.48	2002		

MEAN DAILY DISCHARGE IN CUBIC METERS PER SECOND 2003 --- ANNUAL AND PERIOD SUMMARY												
Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0	0	0	0	162 *	0	0	0	0	0	0	1.60
2	0	0	0	0	176 *	* 4.20	0	0	0	0	0	0
3	0	* 4.80	* 5.00	* 7.20	181 *	0	0	0	* 6.60	0	0	0
4	0	0	0	9.20	186 *	0	7.70	0	* 8.40	0	0	0
5	0	0	0	9.50	154 *	4.40	19.7	0	* 7.40	0	0	0
6	0	0	0	12.4	149 *	4.30	6.10	0	0	0	0	0
7	8.80	0	0	* 18.1	144 *	0	* 6.22	0	7.20	0	0	0
8	0	0	2.00	* 21.0	134 *	6.50	* 4.40	0	0	6.10	0	0
9	0	0	5.70	* 24.8	124 *	2.40	0	0	0	2.00	0	0
10	0	0	0	* 32.0	120 *	0	0	0	0	0	0	0
11	0	0	0	* 32.9	120 *	0	0	0	0	0	0	0
12	7.30	0	0	* 35.3	108 *	0	0	* 9.70	5.00	0	0	0
13	0	0	.80	* 42.3	* 99.0	0	0	0	10.1	* 27.9	0	0
14	* 2.80	0	0	* 47.6	* 82.3	0	3.50	* 2.40	14.5	* 65.1	0	0
15	0	0	0	* 49.7	* 31.8	0	0	* 5.60	5.40	* 83.1	0	0
16	* 6.50	0	0	* 59.7	* 30.0	0	0	7.10	4.10	* 95.1	0	0
17	0	0	0	* 84.1	* 21.0	* 7.70	0	0	* 4.80	81.7	0	0
18	0	0	0	113 *	13.2	* 3.20	0	4.60	.80	65.8	0	0
19	5.00	0	0	142 *	* 6.50	* 5.50	0	* 4.20	* 7.20	65.2	0	0
20	0	0	0	155 *	0	* 9.00	0	0	0	24.8	0	0
21	0	0	0	170 *	0	0	0	0	19.5	5.40	0	0
22	0	0	0	163 *	0	0	0	0	19.9	10.4	0	0
23	0	0	0	163 *	0	0	0	0	0	13.2	10.3	0
24	* 7.80	0	0	166 *	0	0	0	0	0	* 8.60	0	0
25	6.40	0	0	162 *	0	0	0	0	0	9.40	5.10	0
26	0	* 5.00	0	163 *	4.50	0	0	0	0	9.90	* 6.10	0
27	0	* 8.40	0	165 *	13.5	0	0	0	0	10.1	0	0
28	0	0	0	163 *	7.60	0	0	0	0	* 7.80	0	0
29	* 11.2	0	0	164 *	* 6.20	0	0	0	0	5.10	0	0
30	4.50	0	0	159 *	0	0	0	0	0	4.90	0	0
31	0	0	0	6.90	0	0	0	0	0	0	0	0
Sum	60.30	18.20	13.50	2,533.80	2,080.50	47.20	47.62	33.60	81.50	569.40	81.90	12.80
Current Year 2003												Period 1952-2003
Extreme Gage Meters												Volume-Thousand Cubic Meters
Month	High	Low	Day	@ High	@ Low	Average	Total	Average	Average	Maximum	Minimum	
Jan.	29	11.2	11	0	1.95	5,210	118,796	439,093	0			
Feb.	27	8.40	11	0	.65	1,572	93,123	310,245	0			
Mar.	9	5.70	11	0	.44	1,166	42,717	182,376	1,166			
April	21	170	11	0	84.5	218,920	186,008	557,401	2,950			
May	4	186	20	0	67.1	179,755	241,858	531,533	467			
June	20	9.00	11	0	1.57	4,078	107,125	333,959	0			
July	5	19.7	11	0	1.54	4,114	47,415	200,370	392			
Aug.	12	9.70	11	0	1.08	2,903	86,786	333,642	698			
Sept.	14	14.5	11	0	2.72	7,042	56,874	204,486	131			
Oct.	16	95.1	11	0	18.4	49,196	55,040	258,526	0			
Nov.	22	10.4	11	0	2.73	7,076	15,979	103,226	0			
Dec.	26	6.10	12	0	.41	1,106	25,835	205,654	0			
Yearly		186		0	15.3	482,138	1,077,556	1,903,119	46,820			

* Discharge measurement(s) made on this day @ Mean daily ! And other days

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

08-4692.00 RIO GRANDE BELOW ANZALDUAS DAM NEAR REYNOSA, TAMAULIPAS
AND MISSION, TEXAS

DESCRIPTION: Cableway, gravity well, water-stage recorder, and selsyn-type transmitter, located on the right bank at latitude 26° 07' 51", longitude 98° 19' 53", and river kilometer 273; 0.8 river kilometer downstream from Anzalduas Dam, about 7.0 kilometers northwest of Reynosa, Tamaulipas, and 16.6 river kilometers upstream from the international highway bridge between Hidalgo, Texas and Reynosa, Tamaulipas. The zero of the gage is at mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 246 discharge measurements during the year, 225 by the Mexican Section and 21 by the United States Section of the Commission, and a continuous record of gage heights. Records available: 1952 through 2003.

REMARKS: Except during local storms, flow at this station is controlled largely by releases from Falcon Reservoir and by diversions into Anzalduas Canal. Excessive upstream flood flows are partly diverted into the United States floodway system inlet at Anzalduas Dam before reaching this station. The transmitter relays gage height data to the Anzalduas Dam control room.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 3,700 CMS on September 24, 1967, with a stage of 34.48 meters above mean sea level. Min. periods of no flow have occurred on several occasions in 1953, 1954, 1956, and 1957.

Average Flow in Cubic Meters per Second											
Daily:	Max.	3,440	Sept. 25, 1967		Min.	0		Occasionally			
Monthly:	Max.	1,070	Oct. 1958		Min.	0.16		March	1957		
Yearly:	Max.	182	1958		Min.	4.49		1957			

MEAN DAILY DISCHARGE IN CUBIC METERS PER SECOND 2003 --- ANNUAL AND PERIOD SUMMARY												
Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	11.9	15.5	23.0	29.5	* 65.1	* 65.2	* 45.4	* 45.2	* 22.8	* 13.5	63.3	* 18.7
2	* 13.5	16.6	24.6	* 31.6	* 56.3	57.3	42.5	48.9	* 26.0	10.1	58.5	* 14.8
3	* 17.6	* 16.3	21.3	* 32.8	52.6	* 56.4	* 38.5	46.4	* 36.8	10.5	* 53.8	* 15.3
4	14.7	* 15.8	* 19.1	* 33.3	57.5	* 60.4	47.2	* 47.7	* 24.3	11.1	* 47.9	* 23.3
5	18.7	18.2	* 20.5	34.8	* 61.9	* 58.0	63.0	44.0	* 19.5	14.3	* 46.0	* 19.0
6	* 23.3	* 18.1	* 17.6	39.6	* 62.2	* 57.4	39.2	* 50.4	28.1	* 14.3	* 44.6	20.0
7	* 22.2	* 17.9	* 13.8	* 34.8	* 60.3	* 47.5	27.6	* 50.3	35.2	* 13.7	* 43.1	18.7
8	* 22.2	13.0	13.7	* 34.0	* 52.5	46.5	* 22.4	* 47.3	* 22.5	* 15.6	39.8	* 20.3
9	* 22.2	13.7	18.3	38.4	75.5	* 50.3	22.3	54.9	* 21.4	* 11.9	38.8	* 17.0
10	* 18.4	* 15.2	* 24.2	* 32.9	85.7	* 50.0	* 18.7	52.4	* 19.8	* 17.0	* 35.0	* 18.6
11	22.1	* 17.0	* 24.4	* 27.2	80.2	* 55.3	* 19.4	* 45.7	* 16.7	15.3	26.8	* 17.0
12	20.0	* 16.2	* 24.2	22.2	* 83.2	* 50.9	18.1	43.3	20.1	89.3	* 27.5	* 20.3
13	* 23.8	* 14.6	21.7	28.7	* 85.1	* 49.1	13.4	* 44.0	27.6	256	* 30.3	17.9
14	* 24.7	* 14.6	20.8	* 33.3	* 86.2	50.4	14.1	51.3	23.6	309	* 34.5	13.4
15	* 18.5	14.5	19.3	* 33.2	* 87.2	49.6	* 10.2	* 51.4	* 16.3	313	48.2	19.1
16	* 17.3	13.3	22.0	* 44.1	* 93.3	* 46.7	* 14.8	44.0	* 13.6	246	* 48.8	19.1
17	* 14.9	* 12.9	* 19.9	45.5	90.6	40.5	* 20.5	* 35.9	* 17.3	186	* 43.4	* 19.1
18	14.6	16.8	22.2	43.3	95.2	* 38.7	* 20.8	* 22.8	* 17.0	130	* 41.2	* 13.8
19	11.8	* 19.4	* 18.8	46.0	* 93.4	* 29.3	27.5	* 12.4	31.7	* 84.6	* 35.6	17.5
20	* 18.0	* 20.3	* 13.8	47.0	* 89.9	* 23.4	27.8	* 16.4	41.4	* 76.5	33.8	16.4
21	* 19.0	* 20.4	13.9	* 43.4	* 92.8	23.2	* 29.0	* 19.4	55.9	* 84.2	* 25.0	18.6
22	* 21.1	18.5	10.3	* 40.4	* 92.6	32.3	* 27.9	* 18.6	* 53.2	* 71.5	17.7	* 20.2
23	* 18.8	22.4	14.5	* 40.5	* 93.0	* 20.7	* 29.0	21.0	* 69.8	* 68.1	20.5	* 18.9
24	* 16.9	* 24.6	* 17.2	* 33.6	100	* 34.2	* 27.6	* 26.4	47.2	* 77.1	* 15.3	22.4
25	* 14.1	* 27.6	17.1	* 38.7	94.0	* 45.8	* 26.6	* 25.3	* 34.2	73.7	* 12.5	20.8
26	16.0	* 26.8	17.2	* 57.6	* 94.0	* 48.8	28.4	* 22.3	24.9	73.1	* 12.6	* 13.5
27	* 19.2	* 23.5	* 14.6	* 56.4	* 93.3	* 50.4	41.4	* 23.4	20.6	* 77.3	11.4	21.8
28	* 22.9	* 23.2	* 19.7	* 60.4	96.1	57.1	* 42.0	* 22.1	18.9	* 78.3	* 13.2	20.2
29	* 21.8		18.6	* 60.4	* 97.0	54.3	* 40.4	* 21.1	* 15.0	* 70.4	17.7	* 25.0
30	* 19.6		29.8	* 61.4	91.1	* 52.6	* 37.9	21.0	* 18.4	* 67.8	18.6	* 21.5
31	* 19.7		* 31.1		74.1		* 45.6	21.1		* 65.8		* 32.6
Sum	579.5	506.9	607.2	1,205.0	2,531.9	1,402.3	929.2	1,096.4	839.8	2,645.0	1,005.4	594.8

Current Year 2003						Period 1952-2003					
Extreme Gage Meters			Extreme-Cubic Meters per Second			Volume-Thousand Cubic Meters					
Month	High	Low	Day	High	Low	Average	Total	Average	Maximum	Minimum	
Jan.	24.240	23.640	14	29.1	24	10.5	18.7	50,069	106,115	401,561	1,340
Feb.	24.195	23.660	24	27.8	16	10.8	18.1	43,796	85,418	341,107	1,024
Mar.	24.300	23.630	31	31.1	21	9.87	19.6	52,462	96,052	348,805	418
April	25.200	23.920	30	64.2	12	19.3	40.2	104,112	141,408	507,514	3,898
May	25.850	24.820	28	103	7	50.1	81.7	218,756	183,865	591,520	43,410
June	25.300	23.870	1	68.0	23	17.8	46.7	121,159	208,603	838,797	1,828
July	25.320	23.620	5	68.8	14	9.68	30.0	80,283	152,775	687,079	2,461
Aug.	25.020	23.630	9	57.4	19	9.87	35.4	94,729	150,014	1,489,882	1,163
Sept.	25.440	23.600	23	72.3	29	9.31	28.0	72,559	224,604	2,297,808	4,831
Oct.	27.720	23.610	14	403	1	9.59	85.3	228,528	253,679	2,868,998	2,138
Nov.	25.280	23.550	1	67.3	27	8.38	33.5	86,867	124,703	1,773,274	1,770
Dec.	24.370	23.700	31	33.5	25	12.0	19.2	51,391	93,605	666,198	1,855
Yearly	27.720	23.550		403		8					

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

RIO GRANDE FLOODWAY DISCHARGES
LOWER RIO GRANDE VALLEY

on the United States Side

Part of the excess water from floods entering the Lower Rio Grande Valley is diverted from the river through the United States floodway system with the inlet located at Anzalduas Dam near Mission, Texas.

Floodwater entering the system is measured first at the Bunker Floodway Station at Anzalduas Dam near Mission and again 40.6 kilometers downstream at the Main Floodway Station on Farm Road No. 88 bridge south of Weslaco. At a point 4.8 kilometers southwest of Mercedes the floodway divides, one channel going northeastward through the Arroyo Colorado Floodway to the Gulf of Mexico, and the other going to the Gulf via the North Floodway, traveling first northward and then eastward to the Gulf. At the point of diversion, a divisor dike, which runs longitudinally in the Main Floodway, divides and controls the flows into the Arroyo Colorado Floodway and the North Floodway. The flow of the Arroyo Colorado is measured at El Fuste Siphon south of Mercedes and farther downstream at the bridge on U. S. Highway No. 83 south of Harlingen. The North Floodway flow is measured at the bridge on old U. S. Highway No. 83 west of Mercedes and farther downstream at the bridge on U. S. Highway No. 77 near Sebastian.

In 2003, no flood flow was diverted through this floodway system.

on the Mexican Side

Part of the excess water from floods entering the Lower Rio Grande Valley is diverted from the river through the Mexican floodway system, with the inlet located 1.2 river kilometers upstream from Retamal Diversion Dam and 59.7 river kilometers downstream from Anzalduas Dam.

Floodwater entering the system through the Retamal Inlet flows into Culebron and Villa Cardenas Reservoirs through the Retamal Floodway, while floodwater entering the Canal at Anzalduas Dam reaches these lakes via the Culebron and Retamal Canals. From that point it flows in a southeastwardly direction via Floodway No. 1 into the Gulf of Mexico.

The Retamal Floodway replaces the previously used floodway system, which consisted of Retamal Canal, San Rafael Floodway, and Floodway No. 2.

In 2003, a total volume of 2,402 thousand cubic meters was diverted to Retamal Floodway. This diversion occurred on October 17 with a mean daily discharge of 27.8 CMS.

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

08-4732.00 DIVERSIONS FROM THE RIO GRANDE
UNITED STATES SIDE, ANZALDUAS DAM TO PROGRESO

Beginning June 1971, the Texas Water Rights Commission, now the Texas Commission on Environmental Quality, assumed control of the United States portion of the water in Falcon Reservoir and in the Rio Grande below Falcon Dam, the disposition of such waters being made by its Rio Grande Watermaster. Previous to that, since June 1956, such waters had been under the jurisdiction of the 93rd District Court of Texas administered by its Special Watermaster.

During 2003, 45,107 hectares and several towns and rural homes were allotted Rio Grande water in the river reach between Anzalduas Dam and the Progreso International Bridge. Such irrigable area was 17.0% of the total irrigable area below Falcon Dam allotted Rio Grande water.

The total diversion during 2003 in this river reach was 193,730 TCM, or 25.1% of the total water diverted from the Rio Grande below Falcon Dam. Records of diversions in this river reach were determined by means of flowmeters and by deflection meters which were developed by the International Boundary and Water Commission. More than one crop per year is often grown on parts of this land.

EXTREME FLOWS FROM RECORDS:

		Average Flow in Cubic Meters per Second											
Daily:	Max.	33.4	June 1, 1990									Min. 0	Occasionally
Monthly:	Max.	23.1	June 1990									Min. 0.38	May 1972
Yearly:	Max.	12.6	1989									Min. 4.73	1970

MEAN DAILY DISCHARGE IN CUBIC METERS PER SECOND 2003 --- ANNUAL AND PERIOD SUMMARY												
Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.23	2.20	3.08	6.34	13.7	4.65	8.68	9.13	4.30	3.12	2.01	5.09
2	1.90	.68	1.71	6.54	14.8	5.91	8.15	7.42	5.23	2.02	1.77	6.06
3	2.93	4.19	3.09	7.20	10.6	11.4	6.40	7.45	4.88	1.12	3.43	5.86
4	4.09	5.42	3.68	8.30	8.67	13.9	6.04	6.71	3.17	2.42	4.51	7.03
5	3.38	4.82	3.80	10.6	10.7	15.2	6.01	12.2	2.44	2.77	4.98	7.32
6	5.41	4.71	2.07	11.4	11.7	14.4	.97	10.0	1.08	6.27	4.43	5.06
7	6.28	5.21	.45	10.3	11.9	12.5	3.76	10.5	2.72	5.93	4.76	4.16
8	6.87	3.28	.16	9.48	12.9	11.1	5.10	10.0	3.92	5.57	5.22	5.93
9	7.11	1.62	.17	8.57	13.7	14.3	7.30	7.33	4.43	5.55	2.18	5.22
10	6.21	2.55	4.32	8.69	12.3	15.4	7.08	5.76	4.50	4.60	6.23	4.92
11	5.90	5.03	6.96	1.18	12.0	15.9	5.96	9.77	3.93	4.02	5.99	5.42
12	2.24	6.27	6.57	.16	12.7	16.2	3.29	10.2	4.19	1.20	6.52	5.72
13	5.33	6.38	8.11	.69	14.1	14.4	.26	10.5	1.52	2.40	3.62	4.90
14	6.70	6.64	7.41	4.42	14.1	11.8	2.45	13.3	.47	3.46	1.09	1.47
15	3.33	2.85	6.79	5.91	14.4	13.6	.85	9.29	1.76	2.82	.35	5.50
16	4.33	.36	3.95	6.28	16.8	13.5	3.29	4.50	1.66	1.95	.15	6.26
17	3.91	3.81	7.65	9.10	16.3	8.14	8.93	4.63	4.35	1.94	3.01	6.25
18	3.29	5.36	7.77	9.16	14.7	2.63	10.3	4.54	.96	1.90	5.67	5.26
19	.33	6.42	6.95	8.44	17.0	4.34	9.45	.85	1.33	1.58	4.93	4.94
20	4.30	6.74	6.25	9.80	14.6	4.14	8.08	2.30	0	2.27	4.31	4.93
21	6.38	6.97	6.47	10.7	15.9	2.97	10.0	1.13	0	2.62	4.72	4.96
22	5.83	5.96	2.79	10.8	15.8	4.18	9.98	2.63	.57	3.62	1.39	4.21
23	4.99	2.24	4.70	10.7	16.5	9.96	10.2	2.45	2.80	3.63	2.34	6.12
24	3.60	3.30	7.13	9.71	18.1	11.1	9.68	2.57	4.34	2.44	5.12	2.94
25	.39	5.88	7.46	10.3	18.1	12.4	9.09	7.11	2.43	1.80	6.22	0
26	.64	7.42	7.19	11.0	18.2	14.2	8.20	7.66	2.19	1.54	5.14	1.96
27	1.90	6.41	7.08	9.79	17.7	15.1	4.93	6.87	.27	.98	3.61	3.57
28	5.76	6.44	6.81	11.4	17.1	14.2	7.18	6.59	0	0	3.58	0
29	5.38		5.43	13.3	21.1	9.69	7.11	6.37	0	0	3.44	1.05
30	4.53		1.92	11.6	17.4	8.48	6.89	5.06	0	0	.05	0
31	4.37		3.07		11.1		8.46	1.28	0		0	
Sum	127.84	129.16	251.86	454.67	325.69	204.07	206.10	69.44	79.54	110.77	132.11	
Current Year 2003												
Period 1960-2003												
Average Rainfall** Millimeters												
Extreme-Cubic Meters per Second												
Volume-Thousand Cubic Meters												
Month	2003	1960-2003	@ High Day	@ Low Day	Average	Total	Average	Maximum	Minimum			
Jan.	19	30	9	7.11	1	0.23	4.12	11,045	16,591	43,121	892	
Feb.	15	30	26	7.42	16	.36	4.61	11,159	14,447	35,196	2,522	
Mar.	37	22	13	8.11	8	.16	4.87	13,046	22,395	44,562	6,924	
April	47	35	29	13.3	12	.16	8.40	21,761	26,680	48,447	3,758	
May	12	69	29	21.1	4	8.67	14.7	39,283	28,111	53,225	1,008	
June	41	67	12	16.2	18	2.63	10.9	28,140	31,830	59,901	5,184	
July	28	38	18	10.3	13	.26	6.58	17,632	27,838	49,928	8,137	
Aug.	83	60	14	13.3	19	.85	6.65	17,807	21,895	33,973	9,192	
Sept.	232	109	2	5.23	20	0	2.31	6,000	13,961	34,885	3,964	
Oct.	185	65	6	6.27	28	0	2.57	6,872	17,538	38,509	2,540	
Nov.	42	30	12	6.52	30	.05	3.69	9,571	14,524	41,712	1,252	
Dec.	0	29	5	7.32	25	0	4.26	11,414	12,285	24,623	2,284	
Yearly	741	584		21.1		0	6.14	193,730	248,095	398,520	149,260	
@ Mean daily ! And other days ** United States side - average of several stations in the reach												

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

08-4736.00 DIVERSIONS FROM THE RIO GRANDE
UNITED STATES SIDE, PROGRESO TO SAN BENITO

Beginning June 1971, the Texas Water Rights Commission, now the Texas Commission on Environmental Quality, assumed control of the United States portion of the water in Falcon Reservoir and in the Rio Grande below Falcon Dam, the disposition of such waters being made by its Rio Grande Watermaster. Previous to that, since June 1956, such waters had been under the jurisdiction of the 93rd District Court of Texas administered by its Special Watermaster.

During 2003, 123,456 hectares and several towns and rural homes were allotted Rio Grande water in the river reach between Progreso and the gaging station at San Benito. Such irrigable area was 46.6% of the total irrigable area below Falcon Dam allotted Rio Grande water.

The total diversion during 2003 in this river reach was 345,817 TCM, or 44.8% of the total water diverted from the Rio Grande below Falcon Dam. Records of diversions in this river reach were determined by means of flowmeters, by open channel rating stations, and by deflection meters which were developed by the International Boundary and Water Commission. More than one crop per year is often grown on parts of this land.

EXTREME FLOWS FROM RECORDS:

Average Flow in Cubic Meters per Second

Daily:	Max.	82.4	June 5, 1990	Min.	0	Occasionally
Monthly:	Max.	63.0	May 1995	Min.	1.52	March 1957
Yearly:	Max.	27.6	1989	Min.	10.4	1968

MEAN DAILY DISCHARGE IN CUBIC METERS PER SECOND 2003 --- ANNUAL AND PERIOD SUMMARY

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0	1.23	7.08	13.4	30.0	30.8	33.2	20.6	8.12	1.54	2.31	6.05
2	1.54	0	7.14	14.5	28.0	33.3	29.6	18.7	13.3	0	1.05	7.43
3	2.06	2.55	11.0	16.4	21.3	24.6	26.2	26.8	14.6	0	1.15	3.10
4	.86	4.26	11.4	15.4	32.0	24.8	22.2	29.0	15.9	0	4.89	3.41
5	3.42	1.97	10.2	11.9	35.0	24.4	22.2	30.3	14.4	0	2.07	4.39
6	8.30	.05	9.18	12.2	39.3	22.4	30.8	26.5	7.18	.85	3.96	3.06
7	8.42	0	9.23	13.5	38.7	18.7	20.7	25.3	11.1	2.30	2.03	1.74
8	9.66	0	6.31	12.9	30.5	14.3	15.1	27.5	15.5	2.44	2.01	4.87
9	10.2	0	5.12	13.5	32.5	15.7	8.98	24.9	15.2	2.20	1.91	6.98
10	9.48	1.23	4.06	13.8	30.4	17.7	10.6	24.1	10.2	3.49	4.99	5.45
11	4.31	2.51	5.37	15.8	38.9	18.1	2.00	19.2	10.8	4.66	8.78	3.41
12	2.06	3.39	7.24	13.6	48.4	21.0	5.48	18.3	7.34	6.48	9.91	2.10
13	4.31	3.87	7.84	9.64	26.6	20.9	5.55	18.6	8.54	5.08	6.82	1.70
14	9.89	.86	6.00	15.6	30.7	22.3	1.66	18.4	16.1	2.39	2.03	1.77
15	8.87	0	4.23	18.0	29.9	20.4	2.51	23.2	12.2	2.06	1.94	1.77
16	7.73	0	4.25	17.0	30.4	20.1	4.19	20.6	8.05	1.38	1.98	1.74
17	5.48	0	8.22	18.2	30.0	25.7	5.66	17.9	5.81	1.55	2.00	3.96
18	1.74	2.13	8.28	21.7	28.2	21.2	2.46	20.2	5.80	1.33	4.90	5.51
19	1.71	2.75	5.86	23.1	28.4	15.5	2.84	9.92	5.80	.40	4.78	3.38
20	1.78	.84	4.88	22.4	29.2	14.4	2.55	7.32	4.51	0	2.26	1.71
21	4.78	2.76	3.38	21.1	30.1	6.48	10.8	8.37	3.63	2.46	2.36	3.31
22	7.48	3.86	1.17	18.9	31.9	7.52	12.8	10.9	2.63	1.99	0	3.84
23	8.48	6.11	1.18	20.7	28.9	12.7	10.7	11.2	0	4.33	0	5.98
24	6.71	8.58	1.13	19.9	29.9	16.7	10.6	9.52	1.34	6.59	4.26	8.66
25	3.71	11.7	1.21	19.7	32.2	15.3	8.92	11.1	1.80	3.03	3.78	3.96
26	0	12.2	2.07	13.2	49.1	20.8	9.97	12.7	0	0	2.13	1.16
27	4.73	12.3	2.06	21.0	48.4	25.8	6.94	10.6	0	0	2.10	0
28	6.70	8.39	.86	22.4	45.8	22.3	15.1	9.21	0	0	2.08	0
29	10.4	0	23.8	49.1	24.4	17.4	8.95	0	0	0	1.64	0
30	8.30	4.24	22.9	47.2	14.1	16.0	7.18	0	0	0	2.81	0
31	7.07	9.11		43.6		15.8	0		0	0	0	0
Sum	93.54	169.30	516.14	1,074.6	592.40	389.51	527.07	219.85	56.55	92.93	100.44	
	170.18											
Current Year 2003												
Average Rainfall** Millimeters			Extreme-Cubic Meters per Second				Period 1960-2003					
Month	2003	1960-2003	@ High Day	@ Low Day	Average	Total	Volume-Thousand Cubic Meters	Average	Maximum	Minimum		
Jan.	22	35	29	10.4	1	0	5.49	14,704	46,346	119,807	6,010	
Feb.	18	37	27	12.3	1	2	3.34	8,082	27,515	75,228	5,929	
Mar.	68	27	4	11.4	29	0	5.46	14,628	35,160	84,858	9,551	
April	34	42	29	23.8	13	9.64	17.2	44,594	62,085	125,384	4,333	
May	9	72	29	49.1	3	21.3	34.7	92,845	95,466	168,687	8,409	
June	62	71	2	33.3	21	6.48	19.7	51,183	81,043	162,181	13,724	
July	56	47	1	33.2	14	1.66	12.6	33,654	59,054	114,350	13,947	
Aug.	57	69	5	30.3	31	0	17.0	45,539	45,282	88,370	15,710	
Sept.	234	133	14	16.1	23	0	7.33	18,995	28,993	68,815	5,314	
Oct.	149	76	24	6.59	1	2	1.82	4,886	29,125	71,743	4,886	
Nov.	23	39	12	9.91	122	0	3.10	8,029	23,863	66,002	4,252	
Dec.	1	33	24	8.66	127	0	3.24	8,678	22,768	55,789	5,297	
Yearly	733	681		49.1		0	11.0	345,817	556,700	868,544	328,940	
@ Mean daily			And other days				** United States side - average of several stations in the reach					

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

08-4737.00 RIO GRANDE NEAR SAN BENITO, TEXAS
AND RAMIREZ, TAMAULIPAS

DESCRIPTION: Cableway, concrete control weir, bubbler gage, water-stage recorders (graphic and digital), and DCP with GOES high data rate telemetry, located on the left bank at latitude 26° 01' 51", longitude 97° 43' 37", and river kilometer 156, 6.3 river kilometers downstream from San Benito pumping plant and about 15.3 kilometers southwest of San Benito, Texas. The zero of the gage is at mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 45 current-meter measurements during the year and a continuous record of gage heights. Computations for high flows by shifting control methods. Low and medium flow computations based on a stable control weir rating curve defined by current-meter measurements. Records available: November 26, 1952 through August 25, 1953, and December 1953 through 2003.

REMARKS: Except for diversions, tributary inflows, and drainage returns below Falcon Dam, flow at this station after August 25, 1953 was controlled largely by releases from Falcon Reservoir, 286 river kilometers upstream. Excessive upstream flood flows are partly diverted through the United States and Mexican floodway systems before reaching this station. The concrete control weir was constructed in December 1965, and the gage was moved to its present location just above the weir on January 4, 1967.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 708 CMS on September 29, 1967 with a gage height of 18.61 meters. Min. no flow occurs occasionally.

			Average Flow in Cubic Meters per Second**				
Daily:	Max.	702	Sept. 29, 1967	Min.	0	Occasionally	
Monthly:	Max.	405	Oct. 1971	Min.	1.12	Dec.	1956
Yearly:	Max.	107	1976	Min.	5.66		1956

MEAN DAILY DISCHARGE IN CUBIC METERS PER SECOND 2003 --- ANNUAL AND PERIOD SUMMARY												
Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	10.7	9.78	7.78	* 6.61	11.0	20.1	* 6.45	6.88	13.2	* 7.93	64.9	* 10.6
2	10.3	13.8	8.18	6.11	* 14.3	* 18.8	6.32	7.92	10.5	15.0	64.1	6.95
3	* 9.03	* 12.0	9.13	5.65	14.2	13.0	4.37	9.91	* 6.82	14.7	61.7	8.24
4	8.64	6.75	* 8.37	5.44	10.4	8.99	6.50	8.99	12.3	14.7	53.7	9.71
5	9.18	5.10	7.42	6.22	9.35	9.45	9.41	* 4.65	11.3	12.2	* 50.0	11.6
6	7.97	6.24	7.64	6.25	5.50	9.21	18.7	4.01	8.02	* 12.5	44.6	9.52
7	5.97	6.31	8.12	6.41	7.15	10.2	11.1	7.71	13.1	10.8	43.3	13.4
8	5.10	7.42	9.01	7.03	8.12	12.1	11.5	10.2	* 14.8	8.77	41.2	* 12.7
9	3.79	9.73	9.60	6.67	* 2.60	* 13.4	7.13	8.97	7.53	9.86	37.7	8.48
10	2.93	10.8	10.3	6.70	15.7	8.50	6.63	17.1	6.86	9.27	38.5	9.16
11	5.44	* 6.91	* 11.6	6.31	15.9	6.73	7.18	20.2	6.23	10.9	25.4	11.7
12	9.18	6.12	10.4	5.73	14.3	7.63	8.91	18.5	8.45	15.2	17.8	10.9
13	* 12.1	6.84	9.75	8.82	* 18.5	4.38	9.76	14.0	10.8	48.7	21.4	12.5
14	11.4	6.46	9.89	* 7.82	20.7	4.18	11.8	15.7	14.8	139	34.2	13.6
15	10.7	7.25	13.5	5.70	20.5	8.10	13.0	16.5	* 18.0	192 *	40.5	* 12.8
16	10.5	7.03	15.2	5.59	21.0	* 11.1	9.27	16.8	14.7	206	48.8	12.3
17	10.8	7.54	9.93	5.46	20.7	9.35	7.07	18.0	13.3	201	* 53.7	10.8
18	11.1	8.80	8.30	6.89	19.6	6.85	7.17	15.0	14.5	202	46.0	8.38
19	11.5	5.12	7.59	* 6.35	* 21.0	11.2	7.97	14.0	16.3	200	39.1	9.75
20	11.2	4.97	8.57	7.22	21.0	10.5	12.8	10.1	30.2	179	38.5	12.0
21	* 10.6	6.49	8.77	8.19	19.1	8.43	13.9	7.80	45.7	132	33.3	11.5
22	7.35	4.62	8.77	8.30	18.1	8.45	5.66	* 6.81	* 65.9	101	29.1	* 10.6
23	6.08	4.19	8.79	7.96	14.2	* 11.1	* 6.93	5.55	70.4	* 80.6	21.8	10.8
24	7.29	* 5.55	* 8.67	7.62	11.1	9.28	6.36	7.60	84.1	65.9	* 16.9	8.35
25	9.06	6.04	8.54	7.76	12.5	7.50	8.77	11.9	64.0	68.6	11.9	14.9
26	10.2	6.30	7.82	8.74	12.7	6.18	10.2	7.83	46.3	69.5	10.8	18.7
27	* 13.0	7.09	7.24	11.8	13.8	5.20	9.96	4.11	36.9	72.1	9.55	14.6
28	10.4	7.38	7.19	12.0	* 19.6	5.75	12.2	5.47	34.4	* 77.6	10.4	12.8
29	7.89		7.54	11.1	18.3	10.9	6.41	* 7.60	24.9	80.7	13.5	* 10.4
30	8.22		7.41	11.7	16.1	11.1	* 5.21	8.43	13.3	74.6	13.5	7.90
31	9.70		7.01		18.3		3.96	9.49		66.9		8.57
Sum		202.63	278.03	224.15	465.32	287.66	272.60	327.73	737.61	2,399.03	1,035.85	344.21
	277.32											

Current Year 2003						Period 1954-2003					
Extreme Gage Meters			Extreme-Cubic Meters per Second			Volume-Thousand Cubic Meters					
Month	High	Low	Day	High	Day	Average	Total	Average	Maximum	Minimum	
Jan.	11.615	10.590	27	13.8	10	2.45	8.95	23,960	48,970	393,481	3,601
Feb.	11.605	10.770	2	14.9	23	4.04	7.24	17,507	49,435	447,576	4,168
Mar.	11.665	10.615	16	18.0	31	6.87	8.97	24,022	43,421	444,640	3,164
April	10.815	10.545	!27	12.8	12	3.39	7.47	19,367	53,352	430,013	9,689
May	10.950	10.475	20	21.8	9	1.44	15.0	40,204	79,819	472,420	7,830
June	10.945	10.505	!1	20.7	13	2.72	9.59	24,854	87,684	647,984	19,815
July	10.890	10.535	!5	20.4	31	3.54	8.79	23,553	73,040	552,457	5,790
Aug.	10.885	10.520	!10	20.3	27	3.22	10.6	28,316	75,960	1,020,220	3,827
Sept.	12.470	10.560	24	87.0	9	4.32	24.6	63,730	127,690	787,894	9,513
Oct.	15.680	10.605	16	207	1	6.53	77.4	207,276	159,194	1,086,522	4,737
Nov.	11.790	10.670	1	65.5	27	9.10	34.5	89,497	77,660	816,665	6,699
Dec.	10.850	10.610	26	20.2	!2	6.10	11.1	29,740	63,437	591,018	2,992

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

08-4749.00 DIVERSIONS FROM THE RIO GRANDE
UNITED STATES SIDE, SAN BENITO TO BROWNSVILLE

Beginning June 1971, the Texas Water Rights Commission, now the Texas Commission on Environmental Quality, assumed control of the United States portion of the water in Falcon Reservoir and in the Rio Grande below Falcon Dam, the disposition of such waters being made by its Rio Grande Watermaster. Previous to that, since June 1956, such waters had been under the jurisdiction of the 93rd District Court of Texas administered by its Special Watermaster.

During 2003, 27,929 hectares and several towns and rural homes were allotted Rio Grande water in the river reach between gaging stations near San Benito and Brownsville. Such irrigable area was 10.5% of the total irrigable area below Falcon Dam allotted Rio Grande water.

The total diversion during 2003 in this river reach was 81,242 TCM, or 10.5% of the total water diverted from the Rio Grande below Falcon Dam. Records of diversion in this river reach were determined by means of flowmeters, and by deflection meters which were developed by the International Boundary and Water Commission. More than one crop per year is often grown on parts of this land.

EXTREME FLOWS FROM RECORDS:

		Average Flow in Cubic Meters per Second											
Daily:	Max.	22.1	June 14, 1963		Min.	0		Occasionally					
Monthly:	Max.	15.3	June 1965		Min.	0.52		Feb. 1966					
Yearly:	Max.	6.32	1965		Min.	2.58		2003					

MEAN DAILY DISCHARGE IN CUBIC METERS PER SECOND 2003 --- ANNUAL AND PERIOD SUMMARY												
Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.99	1.93	1.11	3.66	8.53	6.30	3.46	2.94	2.93	1.28	0.67	1.08
2	.88	1.72	1.08	1.51	6.70	7.42	3.55	2.66	3.49	.68	.59	1.12
3	1.58	2.25	.68	1.60	4.72	7.12	3.25	2.81	3.63	1.07	.60	1.16
4	1.07	1.31	2.43	1.04	6.92	5.69	1.94	2.92	2.15	.72	1.02	.92
5	1.03	.91	2.43	1.40	7.28	4.74	1.25	2.19	1.19	1.31	.43	1.56
6	.62	1.05	1.11	1.43	6.54	3.17	5.72	2.83	1.05	1.26	.90	2.74
7	.55	.87	1.37	.83	6.83	2.50	3.88	2.82	2.46	1.18	1.40	2.67
8	1.23	.99	1.16	2.38	7.01	2.25	3.51	4.08	4.13	1.30	1.27	2.35
9	1.32	.76	.96	2.74	8.10	2.42	2.20	5.99	4.32	1.30	1.25	.87
10	1.48	.93	1.81	2.80	6.20	3.99	1.34	6.82	2.27	.47	1.33	1.19
11	2.14	1.03	2.15	2.37	4.82	5.62	1.26	8.04	2.36	.63	1.09	1.34
12	1.48	.97	4.71	.94	6.30	5.44	1.17	7.40	2.43	.83	1.18	1.01
13	2.08	1.50	6.77	.97	7.33	5.06	1.14	5.78	1.93	.78	1.52	.67
14	.88	1.60	8.67	1.91	8.15	3.40	1.22	4.75	2.55	.16	1.14	.75
15	1.40	1.84	4.94	3.84	10.7	1.95	1.26	4.57	1.09	.60	1.15	1.05
16	1.03	1.31	1.10	3.59	10.5	2.89	3.50	4.30	1.63	.76	1.02	2.44
17	.90	1.35	1.02	1.52	10.7	2.54	4.62	4.83	.86	.61	.81	1.72
18	1.31	1.35	1.98	2.26	9.30	4.44	3.84	5.41	.14	.11	1.00	1.64
19	.74	1.27	1.28	2.21	10.8	5.04	4.21	5.72	.43	.81	.92	1.91
20	1.45	1.71	2.70	1.87	12.8	5.46	2.67	4.30	.25	1.30	.65	1.60
21	1.43	1.31	2.74	2.43	8.08	3.63	.68	2.64	.43	1.27	1.80	.98
22	2.24	1.00	1.53	3.77	9.01	2.59	4.55	2.03	.55	1.79	1.87	.80
23	1.83	.94	1.28	3.76	8.21	1.61	4.39	3.11	.65	1.79	1.63	.96
24	.64	.95	1.09	4.11	7.99	3.00	4.35	3.01	.63	1.15	1.34	.84
25	.50	.93	2.14	3.34	6.99	3.04	2.88	1.26	.89	.97	2.03	.79
26	.50	.97	2.34	4.55	6.92	3.96	1.68	1.30	.57	0	1.12	.93
27	1.52	.99	2.38	3.88	7.35	4.95	.44	1.58	.53	0	1.22	2.26
28	3.30	1.07	3.97	5.96	7.67	3.48	1.30	1.33	0	0	1.13	0
29	3.09		3.55	7.57	6.75	1.80	4.66	1.93	0	0	1.08	0
30	3.26		2.57	7.15	7.08	1.18	4.37	1.87	0	0	1.18	0
31	2.76		2.26		6.53	1.20	0	0	0	0	0	0
Sum	45.23	34.81	75.31	87.39	242.81	116.68	85.49	111.22	45.54	24.13	34.34	37.35
	Current Year 2003											
	Period 1960-2003											
	Average Rainfall** Millimeters	Extreme-Cubic Meters per Second										
Month	2003	1960-2003	@ High Day	@ Low Day	Average	Total	Average	Volume-Thousand Cubic Meters	Average	Maximum	Minimum	
Jan.	16	38	28	3.30	125	0.50	1.46	3,908	12,117	30,303	1,871	
Feb.	11	35	3	2.25	9	.76	1.24	3,008	8,902	25,442	1,268	
Mar.	30	25	14	8.67	3	.68	2.43	6,507	9,099	18,745	1,777	
April	30	46	29	7.57	7	.83	2.91	7,550	13,978	34,233	2,823	
May	1	71	20	12.8	3	4.72	7.83	20,979	19,089	59,789	1,956	
June	32	69	2	7.42	30	1.18	3.89	10,081	19,715	39,816	4,612	
July	64	43	6	5.72	27	.44	2.76	7,386	15,178	29,633	4,548	
Aug.	41	73	11	8.04	31	0	3.59	9,609	11,848	21,680	4,021	
Sept.	177	137	9	4.32	28	0	1.52	3,935	7,679	14,796	1,081	
Oct.	198	82	122	1.79	126	0	.78	2,085	6,845	14,503	1,962	
Nov.	23	41	25	2.03	5	.43	1.14	2,967	5,647	11,127	2,215	
Dec.	3	36	6	2.74	128	0	1.20	3,227	6,023	11,785	2,484	
Yearly	626	696		12.8	1	0	2.58	81,242	136,120	199,208	81,242	
@ Mean daily		!	And other days				** United States side - average of several stations in the reach					

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

08-4750.00 RIO GRANDE NEAR BROWNSVILLE, TEXAS
AND MATAMOROS, TAMAULIPAS

DESCRIPTION: Cableway, bubbler gage, water-stage recorders (graphic and digital), and DCP with GOES high data rate telemetry located on the left bank at latitude 25° 52' 33", longitude 97° 27' 18", and river kilometer 78.3, 0.3 river kilometer downstream from El Jardin pumping plant, and 11.2 river kilometers downstream from the international highway bridge (Gateway) between Brownsville, Texas and Matamoros, Tamaulipas. The zero of the gage is at mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 41 current-meter measurements during the year and a continuous record of gage heights. Computations by shifting control methods. Records available: 1934 through 2003.

REMARKS: Except for diversions, tributary inflows, and drainage returns below Falcon Dam, flow at this station after August 25, 1953 was controlled largely by releases from Falcon Reservoir, 364 river kilometers upstream. Excessive upstream flood flows are partly diverted into the United States and Mexican floodway systems before reaching this station.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 898 CMS on October 8, 1945 with a gage height of 9.60 meters. Min. no flow occurs frequently.

Average Flow in Cubic Meters per Second**									
Daily:	Max.	459	Oct. 19 & 20, 1971		Min.	0	Frequently		
Monthly:	Max.	408	Oct. 1971		Min.	0.10	Aug. 1957		
Yearly:	Max.	103	1976		Min.	1.19	1956		

MEAN DAILY DISCHARGE IN CUBIC METERS PER SECOND 2003 --- ANNUAL AND PERIOD SUMMARY												
Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	4.96	5.03	2.80	* 2.53	1.35	5.84	* 4.90	* 3.82	6.14	* 14.2	63.5	* 12.9
2	5.54	5.50	3.41	3.27	1.13	* 7.98	3.70	3.53	* 6.59	9.69	59.5	11.3
3	5.58	* 7.75	4.06	3.85	1.14	8.23	2.83	3.21	7.04	11.3	* 58.0	8.53
4	4.89	9.16	* 4.24	3.87	1.79	8.68	2.29	4.04	5.99	12.3	54.7	7.85
5	4.21	9.32	5.18	3.29	1.80	6.94	2.36	5.72	5.72	11.3	47.8	9.06
6	* 3.84	8.16	5.86	2.91	1.54	6.37	2.87	6.43	7.22	* 10.9	43.7	8.69
7	4.11	6.62	5.19	2.68	1.68	6.96	5.25	4.91	7.47	11.0	37.5	7.34
8	3.36	5.62	4.09	2.28	2.06	6.79	8.11	2.49	* 7.12	10.5	36.0	* 10.7
9	2.66	4.90	3.48	2.29	1.78	* 6.43	10.8	2.13	9.13	9.21	33.7	12.6
10	2.24	4.94	3.64	2.35	1.56	6.24	9.77	2.14	9.44	8.32	31.2	9.50
11	1.86	5.96	4.87	2.68	1.41	5.57	8.06	2.00	6.59	7.94	30.4	7.91
12	1.68	6.32	* 6.09	3.94	1.54	3.19	7.20	8.61	5.37	12.5	24.3	10.2
13	* 1.74	* 5.42	5.33	4.48	* 2.36	2.12	6.85	18.6	4.68	22.8	18.3	11.2
14	2.52	4.25	2.80	5.13	4.06	1.94	7.43	16.9	7.12	57.3	19.4	12.0
15	5.08	3.08	1.97	6.44	4.41	3.41	8.52	14.6	* 15.2	126 *	27.2	12.5
16	6.04	2.38	1.75	5.43	3.82	* 6.61	9.95	18.0	13.6	165	33.7	* 11.2
17	5.89	2.40	4.08	3.44	3.15	4.62	8.15	12.4	10.2	185 *	* 42.8	10.6
18	5.95	2.57	6.81	2.54	4.49	4.07	5.62	* 11.5	9.56	185	46.4	8.25
19	6.42	3.09	6.75	2.22	* 3.27	2.63	3.90	10.2	20.9	184	39.1	5.96
20	7.00	3.90	4.64	2.07	2.49	1.92	2.54	8.73	25.7	180 *	33.8	5.63
21	* 7.72	3.78	2.81	1.86	3.94	1.98	3.34	8.23	28.5	169	31.5	8.57
22	7.27	3.11	2.67	1.47	4.93	3.61	5.82	7.43	37.3	140	27.3	* 9.47
23	6.54	2.91	3.22	1.29	3.04	* 5.55	* 4.63	6.33	* 53.9	112	23.8	8.26
24	5.25	* 2.74	* 3.76	1.22	2.15	5.53	2.30	5.14	69.9	85.0	* 19.4	8.38
25	4.41	2.43	4.40	1.22	1.80	5.85	1.73	4.49	87.2	67.2	16.4	7.04
26	4.13	2.32	5.13	1.15	1.40	6.51	2.11	6.22	67.6	72.8	11.7	10.3
27	* 4.97	2.34	5.32	1.06	1.27	6.51	3.18	7.49	43.5	76.8	10.9	14.4
28	6.07	2.44	3.62	1.34	* 1.23	5.43	4.54	6.49	29.2	73.1	9.57	13.5
29	6.66		2.65	1.77	1.63	5.09	* 5.34	4.60	23.2	* 75.8	9.04	* 12.0
30	6.73		2.28	1.78	2.87	4.92	3.41	4.79	18.6	77.1	11.7	10.7
31	5.99		2.23		4.54		2.45	5.86		73.0		7.44
Sum	151.31	128.44	81.85	75.63	157.52	159.95	227.03	649.68	2,256.06	952.31	303.98	
Current Year 2003												
Period 1954-2003												
Extreme Gage Meters												
Extreme-Cubic Meters per Second												
Volume-Thousand Cubic Meters												
Month	High	Low	Day	High	Day	Low	Average	Total	Average	Maximum	Minimum	
Jan.	2.160	1.150	21	7.90	13	1.61	4.88	13,073	38,095	407,379	349	
Feb.	2.165	1.625	5	9.46	2	2.31	4.59	11,097	42,188	446,279	1,303	
Mar.	2.330	1.460	18	7.25	16	1.63	4.04	10,811	35,928	445,080	2,532	
April	2.025	.975	15	6.58	27	1.02	2.73	7,072	37,108	397,086	1,079	
May	1.790	.740	22	5.26	3	1.04	2.44	6,534	59,473	438,873	2,807	
June	2.380	1.415	4	8.98	20	1.84	5.25	13,610	67,278	600,151	2,996	
July	2.635	1.395	9	11.2	25	1.66	5.16	13,820	60,592	539,704	1,383	
Aug.	2.795	1.035	16	23.0	11	1.93	7.32	19,615	62,811	1,001,626	269	
Sept.	4.370	1.105	25	88.0	13	4.53	21.7	56,132	113,446	784,150	1,171	
Oct.	7.265	1.285	17	188	12	7.29	72.8	194,924	147,305	1,094,351	933	
Nov.	3.925	1.330	1	67.9	29	8.67	31.7	82,280	72,223	650,763	1,587	
Dec.	1.695	1.055	27	15.0	20	4.91	9.81	26,264	59,786	591,508	646	
Yearly	7.265	0.740		188		1.02	14.4	455,232	796,233	3,263,087	37,722	

* Discharge measurement(s) made on this day

! And other days

** Period 1954-2003

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

08-4753.00 DIVERSIONS FROM THE RIO GRANDE
UNITED STATES SIDE, BROWNSVILLE TO THE GULF OF MEXICO

Beginning June 1971, the Texas Water Rights Commission, now the Texas Commission on Environmental Quality, assumed control of the United States portion of the water in Falcon Reservoir and in the Rio Grande below Falcon Dam, the disposition of such waters being made by its Rio Grande Watermaster. Previous to that, since June 1956, such waters had been under the jurisdiction of the 93rd District Court of Texas administered by its Special Water Master.

During 2003, 1,180 hectares were allotted Rio Grande water in the river reach between the gaging station near Brownsville and the mouth of the Rio Grande. Such irrigable area was 0.5% of the total irrigable area below Falcon Dam allotted Rio Grande water.

RIO GRANDE WATER: The total diversion during 2003 in this river reach was 2,810 TCM, or 0.4% of the total water diverted from the Rio Grande below Falcon Dam. Records of diversions in this river reach were determined by means of flow meters. More than one crop per year is often grown on parts of this land.

Average Flow in Cubic Meters per Second
Daily: Max. 2.78 June 1, 1996 Min. 0 Frequently

Daily: Max. 2.78

Average Flow in Cubic Meters per Second

Daily:	Max.	2.78	June 1, 1996	Min.	0	Frequently
Monthly:	Max.	0.66	June 1965	Min.	0	Occasionally
Yearly:	Max.	0.20	1965	Min.	0.02	1976

MEAN DAILY DISCHARGE IN CUBIC METERS PER SECOND 2003 --- ANNUAL AND PERIOD SUMMARY

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

08-4754.00 DIVERSIONS FROM THE RIO GRANDE
UNITED STATES SIDE, FALCON DAM TO THE GULF OF MEXICO

Beginning June 1971 the Texas Water Rights Commission, now the Texas Commission on Environmental Quality, assumed control of the United States portion of the water in Falcon Reservoir and in the Rio Grande below Falcon Dam, the disposition of such waters being made by its Rio Grande Watermaster. Previous to that, since June 1956, such waters had been under the jurisdiction of the 93rd District Court of Texas administered by its Special Watermaster.

In 2003, 265,038 hectares, several towns and many rural homes were allotted Rio Grande water between Falcon Dam and the Gulf of Mexico. The total diversion from the river was 772,105 TCM. Records of diversion from the Rio Grande were determined by means of flowmeters, by open channel rating stations and by deflection meters developed by the International Boundary and Water Commission. Drainage from more than 90% of this area does not return to the Rio Grande, but some of it is reused within the area. More than one crop per year is often grown on parts of this land.

Diversion data pertaining to "Diversions from the Rio Grande-United States Side below Rio Grande City" for the period 1922 through 1957 may be found in previous issues of these Water Bulletins. The area irrigated below Rio Grande City is about 99% of the total area irrigated on the United States side below Falcon Dam.

A breakdown by river reaches of the total diversion below Falcon Dam shown in the tabulation below may be found in appropriate downstream order in preceding pages of this Water Bulletin. Because the mean daily discharges are rounded, the total volumes shown in the summary below may not equal the sum of the volumes of the individual reaches.

EXTREME FLOWS FROM RECORDS:

		Average Flow in Cubic Meters per Second			
Daily:	Max.	159	June 1, 1960	Min. 0	Several days, Sept. - Dec., 2003
Monthly:	Max.	123	June 1960	Min. 2.89	Mar. 1957
Yearly:	Max.	59.8	1989	Min. 24.5	2003

MEAN DAILY DISCHARGE IN CUBIC METERS PER SECOND 2003 --- ANNUAL AND PERIOD SUMMARY												
Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	3.31	7.86	13.2	31.1	60.5	50.3	53.3	40.4	18.8	8.25	6.37	17.5
2	9.86	4.74	12.2	30.5	57.8	56.8	48.9	35.0	25.6	6.80	4.07	19.7
3	11.7	15.5	17.6	34.5	43.5	52.0	41.8	44.7	25.1	5.84	7.94	14.6
4	8.49	17.5	20.2	31.8	54.8	54.7	33.3	50.1	22.7	6.15	13.8	15.5
5	11.0	14.5	17.7	28.8	62.5	55.2	32.4	56.5	20.8	7.28	9.88	17.9
6	19.8	12.3	13.2	31.0	68.2	47.2	41.4	50.9	10.9	12.6	11.9	14.5
7	22.3	10.4	13.0	35.3	68.5	38.1	33.0	50.4	17.6	13.3	11.3	11.6
8	24.8	6.59	8.07	33.5	62.3	32.3	28.1	51.3	27.7	13.0	11.2	17.1
9	24.4	4.49	7.99	33.5	64.4	42.9	22.2	46.4	28.1	12.1	7.21	17.0
10	22.6	7.88	10.9	32.2	58.4	47.8	22.9	46.6	20.7	12.4	14.7	16.6
11	15.6	11.3	15.1	25.5	64.8	49.8	12.5	50.8	21.2	11.4	17.9	14.6
12	8.55	15.0	20.1	18.9	80.1	53.7	13.7	48.8	17.5	10.4	19.4	12.2
13	16.6	14.6	25.3	16.4	62.1	48.7	9.53	46.8	14.4	11.3	13.6	9.52
14	22.1	12.6	23.9	32.3	66.3	42.4	7.48	47.0	20.9	7.33	6.10	6.68
15	16.2	6.85	18.4	37.4	69.0	41.7	6.37	41.5	17.1	5.70	4.53	12.3
16	16.6	3.63	11.9	35.9	69.4	43.4	13.2	30.3	12.5	4.96	3.79	14.1
17	13.5	8.71	19.7	37.6	65.7	42.1	25.5	28.5	16.8	5.45	8.95	15.7
18	8.36	13.6	21.1	39.2	60.9	32.9	21.9	34.3	11.5	3.70	13.7	16.2
19	4.60	16.2	17.3	38.1	68.0	27.2	20.2	16.9	8.80	3.52	12.8	13.9
20	10.8	14.4	15.4	39.7	69.8	27.4	17.6	15.7	5.78	7.01	9.69	11.4
21	17.1	14.9	15.5	42.0	67.0	15.7	29.2	14.9	4.81	8.47	12.1	12.0
22	20.6	13.7	7.74	41.5	70.2	17.1	35.0	19.5	5.23	10.3	4.23	13.6
23	20.5	12.1	9.75	42.5	65.3	29.5	33.4	19.3	6.41	12.7	4.73	16.7
24	15.1	16.4	14.3	41.8	65.8	34.6	34.8	18.5	7.45	13.9	14.1	14.2
25	7.39	22.1	16.5	40.2	67.6	37.1	29.1	24.7	7.61	8.90	15.3	5.62
26	3.83	24.0	18.0	34.6	86.2	46.2	24.8	26.2	4.55	1.54	10.9	7.79
27	13.9	22.9	17.3	39.8	84.0	52.4	18.5	24.4	1.05	.98	8.40	9.04
28	22.0	19.5	16.1	46.6	81.0	45.0	33.9	23.2	0	0	9.17	0
29	23.2		11.6	52.1	88.5	41.1	39.8	22.0	0	0	10.7	1.05
30	20.1		12.0	49.5	84.5	29.3	37.7	17.3	0	0	6.52	0
31	17.1		21.3		70.8		35.4	1.28	0	0	0	
Sum	471.99	364.25	482.35	1,073.8	2,107.9	1,234.6	856.88	1,044.18	401.59	225.28	304.98	368.60
	Current Year 2003											
Month	Average Rainfall** Millimeters		Extreme-Cubic Meters per Second		Volume-Thousand Cubic Meters							Period 1957-2003
Month	2003	1958-2003	@ High Day	@ Low Day	Average	Total	Average	Maximum	Minimum			
Jan.	18	34	8	24.8	1	3.31	15.2	40,780	89,233	224,987	11,984	
Feb.	19	33	26	24.0	16	3.63	13.0	31,471	67,642	155,700	14,537	
Mar.	33	21	13	25.3	22	7.74	15.6	41,675	92,668	193,098	19,538	
April	30	36	29	52.1	13	16.4	35.8	92,776	134,872	258,994	15,713	
May	14	63	29	88.5	3	43.5	68.0	182,123	150,863	306,530	19,823	
June	44	67	2	56.8	21	15.7	41.2	106,669	162,662	319,179	28,140	
July	53	40	1	53.3	15	6.37	27.6	74,034	130,682	242,015	38,857	
Aug.	58	59	5	56.5	31	1.28	33.7	90,217	107,500	182,408	44,662	
Sept.	244	114	9	28.1	28	0	13.4	34,697	71,037	168,349	15,676	
Oct.	195	74	24	13.9	128	0	7.27	19,464	74,896	162,305	16,023	
Nov.	37	33	12	19.4	16	3.79	10.2	26,350	62,261	163,201	15,633	
Dec.	2	29	2	19.7	128	0	11.9	31,847	57,651	113,823	17,311	
Yearly	747	603		88.5		0	24.5	772,103	1,201,967	1,879,991	772,103	

@ Mean daily

! And other days

** United States side - average of several stations in the reach

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

OUTFALLS FROM SEWERS INTO THE RIO GRANDE

In Thousand Cubic Meters

EL PASO SEWAGE OUTFALL

Treated sewage effluent enters the Rio Grande through the outfall of the Haskell Street Wastewater Treatment Plant located 11.4 river kilometers downstream from the American Dam and the Northwest Wastewater Treatment Plant which enters the Rio Grande 0.5 miles upstream from the American Dam. Outfalls from both Plants are measured by means of ultrasonic flow meters with a Parshall flume at the Northwest Plant. Beginning in 1999, the Haskell Street Plant discharges primarily to the American Canal Extension, and these volumes are not reflected in the tabulation below. The records are furnished by the City of El Paso, Texas.

Month	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Yearly
2003 1,029 800 762 658 561 517 418 476 430 697 932 832 8,112													
Average 1,988 1,874 1,906 1,801 1,855 1,889 2,019 2,002 1,873 1,876 1,820 1,821 22,724													
Period average 1994-2003													

CD. ACUNA SEWAGE OUTFALL

Treated sewage effluent enters the Rio Grande at approximately river kilometer 899. The outfall from this plant is measured by means of a flowmeter. The records are furnished by the Mexican Section of the Commission.

Month	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Yearly
2003 359 373 430 374 349 445 539 585 514 349 441 491 5,249													
Average 359 373 430 374 349 445 539 585 514 349 441 491 5,249													
Period average Jan 2003-Dec 2003													

EAGLE PASS SEWAGE OUTFALL

Treated sewage effluent enters the Rio Grande at approximately river kilometer 782. The outfall from this plant is measured by means of a flowmeter. The records are furnished by the Eagle Pass Water Treatment Department.

Month	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Yearly
2003 350 328 331 314 352 350 389 372 413 403 351 361 4,314													
Average 286 253 276 266 284 276 285 289 296 305 291 310 3,417													

Period average 1994-2003

PIEDRAS NEGRAS SEWAGE OUTFALL

Treated sewage effluent enters the Rio Grande at approximately river kilometer 794.3. The outfall from this plant is measured by means of a flowmeter. The records are furnished by the Mexican Section of the Commission.

Month	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Yearly
2003 873 871 982 934 963 931 965 962 927 961 934 966 11,269													
Average 873 871 982 934 963 931 965 962 927 961 934 966 11,269													

Period average Jan 2003-Dec 2003

LAREDO SEWAGE OUTFALL

Treated sewage effluent enters the Rio Grande from two sewage treatment plants, Zacate Creek Sewage Treatment Plant and Southside Sewage Treatment Plant. These sewage outfalls enter the Rio Grande at river kilometers 579 and 573, 1.4 and 7.9 river kilometers respectively downstream from the old international highway bridge Laredo, Texas and Nuevo Laredo, Tamaulipas. The records are furnished by the Laredo Water Treatment Plant in Laredo, Texas.

Month	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Yearly
2003 1,761 1,640 1,794 1,783 1,881 1,849 1,963 1,922 1,943 1,764 1,831 1,803 21,934													
Average 1,472 1,373 1,556 1,578 1,709 1,667 1,732 1,746 1,690 1,672 1,509 1,547 19,251													

Period average 1994-2003

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

OUTFALLS FROM SEWERS INTO THE RIO GRANDE

In Thousand Cubic Meters

NUEVO LAREDO SEWAGE OUTFALL

The effluent of the International Wastewater Treatment Plant is measured by means of a Parshall flume equipped with an electronic digital recorder, chart recorder, and staff gage. The plant discharges to the Arroyo del Coyote at a point approximately 100 meters upstream from the confluence of the Arroyo with the Rio Grande at river kilometer 569.

Month	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Yearly
2003	2,927	2,603	2,971	2,960	3,214	3,087	3,190	3,073	3,084	3,038	3,107	2,926	36,180
Average	2,926	2,729	3,092	2,971	3,194	3,108	3,188	3,100	3,104	3,083	3,013	3,010	36,518

Period average 1998-2003

ROMA SEWAGE OUTFALL

Treated sewage effluent enters the Rio Grande at river kilometer 409.1, 1.3 river kilometers downstream from the Cd. Miguel Aleman, Tamaulipas - Roma, Texas highway bridge. Records furnished by the City of Roma, Texas.

RIO GRANDE CITY SEWAGE OUTFALL

Treated sewage effluent enters the Rio Grande at river kilometer 378.5, 0.4 river kilometers upstream from the Rio Grande at Rio Grande City Gaging Station and 0.6 river kilometers upstream from the Cd. Camargo, Tamaulipas - Rio Grande City, Texas highway bridge. Records furnished by Rio Grande City, Texas.

BROWNSVILLE SEWAGE OUTFALL

Treated sewage effluent enters the Rio Grande at river kilometer 75.3, 14.3 river kilometers downstream from the Gateway Bridge between Brownsville, Texas and Matamoros, Tamaulipas and 3.1 river kilometers downstream from the Brownsville Gaging station. Records are furnished by the City of Brownsville.

Month	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Yearly
2003	578	537	587	572	616	625	633	665	853	918	678	630	7,892
Average	626	577	637	627	659	632	636	662	673	721	633	615	7,697

Period average 1994-2003

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

MUNICIPAL AND INDUSTRIAL WATER USES

In Thousand Cubic Meters

Tabulated below are monthly and yearly amounts of water pumped from the Rio Grande directly into municipal distribution systems of cities along the border, except for the city of Del Rio, whose main supply is derived from San Felipe Springs; and the city of El Paso, whose supply is partially derived from deep wells. The amount shown below for the city of El Paso is Rio Grande water pumped from the Franklin Canal at the Robertson-Umbenhauer Water Treatment Plant and from the Riverside Canal at the Jonathan W. Rogers Water Treatment Plant for municipal use. Ciudad Acuna, Coahuila, whose municipal diversion from the Rio Grande started in 1971, may at times use an alternate source from Arroyo Las Vacas, which was its previous source of supply. Such use would be reflected in the tabulations below.

All Rio Grande water used by U. S. municipalities below Falcon Dam is also included in the figures shown under "Diversions from the Rio Grande - United States Side..." (by river reaches and total below Falcon Dam) on prior pages of this bulletin. Population data was provided by the Chamber of Commerce for each city in the United States, except El Paso, which was provided by the City Planning Office; Falcon Village, estimated by the International Boundary and Water Commission; Del Rio, by the Middle Rio Grande Development Council; Laughlin Air Force Base, by the U.S. Air Force; Laredo, by the Laredo Development Foundation; and Rio Bravo and San Ygnacio, which are based on utilities connections.

In the United States

		EL PASO (Pop. 583,949)			DEL RIO (Pop. 33,865)					
Month	2003	Period		1994 - 2003		2003	Period		1994 - 2003	
		Average	Maximum	Minimum	Average		Maximum	Minimum		
Jan.	0	74.1	741	0	793	936	1,122	793		
Feb.	0	539	1,160	0	710	919	1,130	710		
Mar.	0	4,934	6,678	0	926	1,136	1,398	926		
April	0	7,315	9,017	0	1,175	1,324	1,756	1,107		
May	1,347	8,680	10,647	1,347	1,329	1,459	1,844	1,122		
June	6,415	9,043	10,817	6,415	1,188	1,575	2,030	1,188		
July	5,657	8,996	10,377	5,657	1,105	1,782	2,277	1,105		
Aug.	10,692	9,501	10,692	6,521	1,354	1,625	2,015	667		
Sept.	7,440	8,363	9,910	6,348	989	1,324	1,647	989		
Oct.	0	3,112	7,930	0	872	1,137	1,461	872		
Nov.	0	8.4	83.6	0	778	922	1,289	778		
Dec.	0	0	0	0	817	901	1,163	775		
Yearly	31,551	60,566	71,153	31,551	12,036	15,040	17,027	11,551		

		EAGLE PASS (Pop. 22,413)			LAREDO (Pop. 176,576)			
Month	2003	Period		1994 - 2003	2003	Period		1994 - 2003
		Average	Maximum	Minimum		Average	Maximum	Minimum
Jan.	483	455	484	417	2,857	2,925	3,570	2,458
Feb.	446	438	504	347	2,537	2,751	3,258	2,269
Mar.	563	524	609	432	3,265	3,249	4,156	2,644
April	678	620	705	436	3,662	3,611	4,848	2,501
May	813	694	857	542	4,674	4,228	4,990	2,976
June	797	729	938	537	4,719	4,401	5,716	3,344
July	650	787	989	650	4,723	4,800	6,552	3,718
Aug.	773	836	973	654	4,689	4,645	5,807	3,224
Sept.	465	640	821	465	3,207	3,642	5,069	2,907
Oct.	543	568	632	513	3,322	3,384	3,903	2,957
Nov.	575	480	575	388	2,993	2,961	3,381	2,546
Dec.	517	472	584	408	3,415	2,928	3,587	2,427
Yearly	7,303	7,243	8,267	6,315	44,063	43,525	48,754	38,393

Month	LAREDO POWER STATION				RIO BRAVO				(Pop. 5,553)	
	2003	Period	1994 - 2003		2003	Period	1994 - 2003			
		Average	Maximum	Minimum		Average	Maximum	Minimum		
Jan.	75.7	71.3	90.5	40.0	85.6	84.9	103	60.8		
Feb.	57.0	80.1	115	30.3	78.9	75.1	97.5	59.3		
Mar.	57.0	88.4	137	40.0	101	92.4	132	57.3		
April	54.0	122	216	54.0	116	108	132	69.3		
May	139	165	213	125	134	131	202	85.0		
June	185	192	260	156	137	125	164	84.0		
July	211	226	286	180	124	138	167	119		
Aug.	243	229	343	146	144	129	163	94.5		
Sept.	190	176	239	110	97.2	109	153	80.2		
Oct.	120	135	169	89.0	109	97.2	112	81.9		
Nov.	88.4	84.9	145	16.1	86.3	84.9	107	63.6		
Dec.	81.9	82.9	146	45.1	91.3	86.7	146	45.9		
Yearly	1,502	1,653	1,892	1,274	1,304	1,261	1,529	966		

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

MUNICIPAL AND INDUSTRIAL WATER USES

In Thousand Cubic Meters

In the United States

Month	SAN YGNACIO (Pop. 853)			ZAPATA (Pop. 13,567)				
	Period 2003		1994 - 2003	Period 2003		1994 - 2003		
	Average	Maximum	Minimum	Average	Maximum	Minimum		
Jan.	16.8	15.3	17.7	13.1	134	158	199	130
Feb.	15.7	15.1	17.6	13.1	125	149	169	125
Mar.	24.1	19.0	24.1	14.6	207	186	215	158
April	28.4	21.6	28.4	14.6	189	194	244	122
May	31.7	24.7	31.7	18.5	216	209	258	169
June	28.5	24.4	34.7	19.3	182	211	289	171
July	25.4	26.1	29.9	22.9	202	222	305	151
Aug.	29.5	25.2	31.6	17.4	296	232	296	174
Sept.	21.6	19.3	25.3	13.9	166	185	266	142
Oct.	23.0	19.0	23.3	15.7	158	169	208	144
Nov.	20.8	16.6	20.8	12.8	204	163	204	113
Dec.	23.6	16.6	23.6	12.7	173	159	227	115
Yearly	289	243	289	201	2,252	2,237	2,505	2,009

Month	FALCON VILLAGE (Pop. 85)			ROMA (Pop. 9,613)				
	Period 2003		1994 - 2003	Period 2003		1994 - 2003		
	Average	Maximum	Minimum	Average	Maximum	Minimum		
Jan.	6.4	7.4	10.0	4.2	182	201	227	172
Feb.	5.7	6.9	9.6	3.8	165	191	209	165
Mar.	7.5	8.5	11.7	4.9	184	221	248	184
April	9.0	9.3	12.9	4.5	158	229	278	158
May	11.4	10.4	13.3	5.7	230	267	331	219
June	10.9	10.4	13.3	7.6	238	253	309	221
July	9.9	11.4	14.7	8.8	215	266	325	205
Aug.	10.0	11.4	14.7	7.4	215	264	316	215
Sept.	5.6	9.3	14.1	5.6	199	222	278	150
Oct.	4.8	8.6	10.4	4.8	205	251	540	196
Nov.	4.4	7.4	10.2	4.4	177	222	416	177
Dec.	4.5	6.8	9.9	4.5	183	198	218	182
Yearly	90.1	108	140	83.4	2,351	2,785	3,188	2,351

Month	RIO GRANDE CITY (Pop. 14,000)			BROWNSVILLE (Pop. 150,000)				
	Period 2003		1994 - 2003	Period 2003		1994 - 2003		
	Average	Maximum	Minimum	Average	Maximum	Minimum		
Jan.	279	270	315	209	2,379	1,980	2,461	1,759
Feb.	257	223	284	168	2,228	1,836	2,271	1,601
Mar.	340	259	407	112	2,569	2,121	2,569	1,865
April	287	304	440	175	2,666	2,202	2,744	1,630
May	444	333	444	197	3,302	2,504	3,377	1,916
June	387	315	438	222	3,004	2,512	3,777	2,017
July	337	339	450	259	2,292	2,651	3,144	1,945
Aug.	451	309	451	261	2,978	2,464	2,978	2,127
Sept.	295	285	394	174	1,781	2,071	2,767	1,781
Oct.	281	256	317	125	1,762	1,973	2,500	1,733
Nov.	349	251	349	171	2,608	1,905	2,608	1,661
Dec.	282	251	324	183	2,215	1,946	2,268	1,727
Yearly	3,989	3,395	3,989	2,668	29,784	26,165	31,998	23,013

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

MUNICIPAL AND INDUSTRIAL WATER USES

In Thousand Cubic Meters

In Mexico

Month	CD. ACUNA, COAHUILA (Pop. 110,487)			RIO ESCONDIDO POWER PLANT				
	Period 1994 - 2003		2003	Period 1994 - 2003		2003		
	2003	Average	Maximum	Minimum	Average	Maximum	Minimum	
Jan.	1,095	528	1,095	305	2,540	1,854	2,747	1,331
Feb.	976	480	976	277	2,427	1,859	2,427	1,300
Mar.	1,174	546	1,174	307	2,127	1,984	2,739	929
April	1,099	529	1,099	298	2,369	2,190	3,039	1,709
May	1,225	564	1,225	310	2,687	2,109	3,050	560
June	1,300	563	1,300	291	2,430	2,294	3,200	1,903
July	1,319	619	1,319	309	2,364	2,605	3,940	1,934
Aug.	1,525	651	1,525	310	2,942	2,513	3,278	1,759
Sept.	1,399	613	1,399	298	1,605	2,219	2,957	1,539
Oct.	1,326	605	1,326	308	1,847	2,177	2,662	1,501
Nov.	1,299	584	1,299	296	1,659	1,953	2,373	1,567
Dec.	1,156	579	1,156	303	1,906	1,860	2,630	1,190
Yearly	14,893	6,861	14,893	3,622	26,903	25,616	32,213	21,929

Month	PIEDRAS NEGRES, COAHUILA (Pop. 128,130)			NUEVO LAREDO, TAMAULIPAS (Pop. 310,915)				
	Period 1994 - 2003		2003	Period 1994 - 2003		2003		
	2003	Average	Maximum	Minimum	Average	Maximum	Minimum	
Jan.	1,294	1,176	1,522	834	3,848	3,733	4,787	2,218
Feb.	1,196	1,082	1,270	779	3,546	3,419	4,678	1,776
Mar.	1,229	1,232	1,507	779	3,945	3,792	4,925	1,937
April	1,570	1,312	1,680	738	3,692	3,890	4,650	2,797
May	1,825	1,400	1,825	885	4,222	4,301	5,358	2,947
June	1,840	1,478	1,840	1,029	4,131	4,179	5,011	2,632
July	1,666	1,539	1,838	1,097	4,566	4,458	4,963	3,693
Aug.	1,771	1,544	1,876	1,021	4,765	4,473	5,270	3,134
Sept.	1,363	1,406	1,692	906	4,410	4,361	4,843	3,560
Oct.	1,597	1,360	1,643	929	4,210	4,234	4,870	2,996
Nov.	1,450	1,200	1,450	840	3,915	3,989	4,706	2,449
Dec.	1,429	1,203	1,465	818	3,863	4,023	4,864	2,597
Yearly	18,230	15,931	18,699	10,860	49,113	48,853	56,762	34,507

Month	NUEVA CD. GUERRERO, TAMAULIPAS (Pop. 4,366)			CD MIER, TAMAULIPAS (Pop. 6,788)				
	Period 1994 - 2003		2003	Period 1994 - 2003		2003		
	2003	Average	Maximum	Minimum	Average	Maximum	Minimum	
Jan.	48.7	60.0	73.0	48.7	68.8	61.0	80.0	45.0
Feb.	54.4	56.0	66.0	48.0	48.7	50.0	63.0	43.0
Mar.	47.0	58.0	73.0	47.0	54.0	57.0	67.0	48.0
April	48.9	56.0	72.0	30.0	63.5	61.0	75.0	51.0
May	85.8	66.0	86.0	54.0	71.5	65.0	80.0	37.0
June	37.7	60.0	73.0	37.7	72.0	70.0	78.0	52.0
July	35.0	62.0	74.0	35.0	62.8	73.0	80.0	56.0
Aug.	36.6	61.0	75.0	36.6	70.0	67.0	78.0	54.0
Sept.	28.7	59.0	72.0	28.7	47.1	63.0	78.0	47.0
Oct.	30.0	59.0	74.0	30.0	59.1	61.0	73.0	54.0
Nov.	26.0	56.0	72.0	26.0	62.9	58.0	74.0	47.0
Dec.	25.2	58.0	74.0	25.0	77.5	61.0	78.0	45.0
Yearly	504	712	825	504	758	746	789	683

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

MUNICIPAL AND INDUSTRIAL WATER USES

In Thousand Cubic Meters

In Mexico

Month	CD. MIGUEL ALEMAN, TAMAULIPAS (Pop. 25,704)			CAMARGO, TAMAULIPAS (Pop. 16,787)				
	Period 1994 - 2003		Period 2000 - 2003					
	2003	Average	Maximum	Minimum	2003	Average	Maximum	Minimum
Jan.	192	217	245	139	0	28.0	59.0	0
Feb.	176	210	238	176	0	23.0	58.0	0
Mar.	208	238	257	206	0	28.0	59.0	0
April	211	235	259	181	0	47.0	70.0	0
May	262	265	294	250	0	55.0	80.0	0
June	291	262	291	241	0	52.0	80.0	0
July	303	272	303	248	0	51.0	78.0	0
Aug.	315	265	315	242	0	58.0	80.0	0
Sept.	253	242	259	215	0	53.0	73.0	0
Oct.	261	246	320	181	0	31.0	61.0	0
Nov.	238	235	338	181	0	43.0	62.0	0
Dec.	226	226	274	170	0	40.0	59.0	0
Yearly	2,936	2,913	3,059	2,741	0	508	772	0

Month	CD. DIAZ ORDAZ, TAMAULIPAS (Pop. 16,246)			REYNOSA, TAMAULIPAS (Pop. 420,463)				
	Period 1996 - 2003		Period 1996 - 2003					
	2003	Average	Maximum	Minimum	2003	Average	Maximum	Minimum
Jan.	45.0	128	187	45.0	4,319	4,049	4,692	3,370
Feb.	38.4	112	139	38.0	3,707	3,949	6,566	2,998
Mar.	43.4	134	182	43.0	4,299	4,185	4,847	3,413
April	47.7	124	146	47.7	4,746	4,470	5,469	3,162
May	53.2	135	163	53.0	6,197	5,210	6,229	3,110
June	54.0	132	155	54.0	5,988	5,142	5,988	3,266
July	51.1	135	161	51.0	5,866	5,485	6,143	3,845
Aug.	53.8	144	199	53.8	5,926	5,624	6,126	4,501
Sept.	46.2	118	164	43.0	5,147	5,114	5,694	4,069
Oct.	46.8	117	154	43.0	4,567	4,880	5,760	4,018
Nov.	45.3	110	149	43.0	5,051	4,559	5,219	3,741
Dec.	44.7	109	149	43.0	5,076	4,397	5,076	3,491
Yearly	570	1,497	1,826	570	60,889	57,062	63,499	43,936

Month	CONTROL - VALLE HERMOSO, TAMAULIPAS (Pop. 58,573)			MATAMOROS, TAMAULIPAS (Pop. 418,141)				
	Period 1998 - 2003		Period 1996 - 2003					
	2003	Average	Maximum	Minimum	2003	Average	Maximum	Minimum
Jan.	455	349	455	250	6,016	4,653	6,016	3,002
Feb.	476	337	476	219	5,402	4,407	5,402	3,006
Mar.	520	315	520	69.0	5,954	4,641	5,954	3,000
April	534	365	534	252	5,725	4,449	5,725	2,903
May	565	349	565	284	5,867	4,828	5,867	3,993
June	588	377	588	274	5,177	4,502	5,177	1,940
July	605	383	605	187	5,138	4,932	5,481	2,853
Aug.	618	397	618	264	5,206	4,881	5,472	3,194
Sept.	621	407	621	334	8,353	5,051	8,353	3,046
Oct.	629	419	629	327	4,764	4,448	5,866	2,980
Nov.	591	426	591	333	4,413	4,586	5,648	2,573
Dec.	617	401	617	314	4,545	4,735	6,003	2,589
Yearly	6,819	4,411	6,819	3,156	66,560	53,240	66,560	19,175

STORED WATER IN LARGE RESERVOIRS OF THE RIO GRANDE BASIN
In Million Cubic Meters

Data are presented below for all storage reservoirs in the Rio Grande basin in the United States and Mexico that exceed 18.5 million cubic meters in capacity. The monthly figures represent the water in storage on the last day of each month, in millions of cubic meters. The capacities indicated are at spillway level. Storage figures greater than the capacity indicate that the water surface was above spillway level.

The reservoirs and the agencies providing the data are: Rio Grande, Continental, Santa Maria, Terrace, Mountain Home, Sanchez and Platoro from the State of Colorado, Division of Water Resources; Heron, El Vado, Elephant Butte, Caballo, Sumner, and Brantley from the United States Bureau of Reclamation; Abiquiu, Cochiti, Jemez Canyon and Santa Rosa from United States Corps of Engineers; Costilla and Bluewater from the United States Geological Survey; Storrie from the State Engineer Office of New Mexico; Red Bluff from the Red Bluff Water Power Control District; Delta Lake from the Delta Lake Irrigation District. The data for all reservoirs in the Mexican portion of the watershed were provided by the National Water Commission. The data for Amistad Reservoir (International) and Falcon Reservoir (International) were provided by the International Boundary and Water Commission.

In the United States

	RIO GRANDE (Capacity 63.0)	CONTINENTAL (Capacity 28.0)	SANTA MARIA (Capacity 55.6)	TERRACE (Capacity 21.2)	MOUNTAIN HOME (Capacity 22.9)					
Month	2003	Average 1927-2003	2003	Average 1928-2003	2003	Average 1928-2003	2003	Average 1925-2003	2003	Average 1924-2003
Jan.	21.8	17.7	3.3	5.9	13.6	10.0	2.5	5.6	0.9	4.4
Feb.	22.4	19.0	3.9	6.4	13.6	10.5	2.7	6.2	1.1	4.8
Mar.	23.5	20.9	4.6	7.1	13.2	10.9	3.3	7.0	1.4	5.2
April	23.4	22.4	6.3	7.9	11.4	11.8	4.0	7.5	1.8	5.9
May	16.2	25.7	1.3	9.4	5.2	14.3	4.0	8.4	3.3	7.9
June	5.3	28.3	1.3	9.6	5.1	16.8	3.3	9.8	3.5	8.5
July	4.9	18.8	1.3	7.0	5.2	13.9	1.5	7.7	3.5	6.1
Aug.	4.9	12.1	1.3	4.7	5.2	9.8	0.1	5.3	1.7	3.9
Sept.	5.0	10.6	1.3	4.2	5.1	8.4	0.6	4.3	2.0	3.4
Oct.	5.0	11.0	1.3	4.2	5.2	8.6	0.1	4.3	2.5	3.4
Nov.	7.2	13.3	1.9	4.5	5.3	9.1	0	4.7	2.8	3.8
Dec.	9.4	16.1	2.5	5.6	5.7	9.6	0	5.1	3.1	4.1
Avg.	12.4	18.0	2.5	6.4	7.8	11.1	1.8	6.3	2.3	5.1
Max.	23.5	67.6	6.3	32.9	13.6	51.9	4.0	21.8	3.5	20.2
Min.	4.9	0	1.3	0	5.1	0	0	0	0.9	0

	SANCHEZ (Capacity 127.3)	PLATORO (Capacity 73.5)	COSTILLA (Capacity 19.4)	HERON (Capacity 495.0)	EL VADO (Capacity 229.8)					
Month	2003	Average 1927-2003	2003	Average 1952-2003	2003	Average 1922-2003	2003	Average 1971-2003	2003	Average 1935-2003
Jan.	13.9	20.8	13.3	20.4	3.1	5.9	197.1	339.2	15.6	74.6
Feb.	14.8	20.7	13.4	20.2	3.5	6.4	197.1	334.8	19.4	72.7
Mar.	15.4	21.5	13.3	20.5	4.2	7.0	194.4	323.5	27.5	79.1
April	15.8	22.8	13.1	20.5	5.5	8.4	198.9	318.7	53.3	117.1
May	16.0	25.6	14.4	23.6	6.6	10.5	226.6	356.6	123.9	156.7
June	14.4	27.4	16.5	31.4	6.5	10.0	235.2	384.9	120.5	148.6
July	10.3	22.9	11.8	28.5	4.5	6.9	194.1	384.9	77.1	127.7
Aug.	9.0	19.3	9.8	25.4	3.3	4.6	170.1	382.0	47.3	104.5
Sept.	8.9	18.8	9.6	24.9	3.3	3.9	169.7	376.6	47.7	90.3
Oct.	14.2	19.6	9.6	23.9	4.1	4.4	164.3	374.5	43.5	83.9
Nov.	14.9	20.1	9.4	20.9	4.7	4.9	156.8	369.7	43.9	76.2
Dec.	15.6	20.6	9.7	21.0	5.2	5.4	152.0	348.3	37.3	75.3
Avg.	13.6	21.7	12.0	23.4	4.5	6.5	188.0	357.8	54.8	100.6
Max.	16.0	78.6	16.5	68.2	6.6	20.2	235.2	495.0	123.9	251.0
Min.	8.9	0	9.4	0	3.1	0	152.0	0	15.6	0

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

STORED WATER IN LARGE RESERVOIRS OF THE RIO GRANDE BASIN
In Million Cubic Meters

In the United States

Month	ABIQUIU (Capacity 1,481.4)		COCHITI (Capacity 619.6)		JEMEZ CANYON (Capacity 123.9)		BLUEWATER (Capacity 47.5)		ELEPHANT BUTTE (Capacity 2,495.8)	
	2003	Average 1965-2003	2003	Average 1973-2003	2003	Average 1965-2003	2003	Average 1927-2003	2003	Average 1915-2003
Jan.	54.1	117.6	61.8	70.9	0	12.0	2.0	10.2	473.9	1,190.0
Feb.	53.4	116.8	62.8	67.5	0	12.2	2.1	11.0	499.6	1,194.5
Mar.	53.2	115.5	62.8	67.4	0	13.0	6.9	15.6	488.1	1,155.0
April	57.0	125.1	63.7	74.2	0	16.9	7.1	19.4	455.6	1,142.9
May	58.0	166.5	62.2	97.2	0	17.9	6.7	17.4	420.3	1,231.5
June	53.4	156.7	61.4	99.8	0	15.0	6.2	14.7	331.7	1,255.2
July	72.0	143.7	60.8	79.1	0	13.8	5.8	12.9	268.6	1,187.0
Aug.	82.2	139.2	60.5	72.1	0	13.2	5.6	11.6	195.6	1,122.8
Sept.	80.2	132.8	59.5	71.6	0	12.4	5.5	10.9	190.4	1,094.7
Oct.	82.2	128.2	59.5	74.2	0	11.6	5.3	10.5	201.2	1,096.6
Nov.	84.6	121.5	59.0	74.4	0	11.6	5.1	10.3	220.8	1,123.8
Dec.	90.0	120.5	58.9	74.1	0	11.8	5.0	10.1	259.6	1,156.4
Avg.	68.4	132.0	61.1	76.9	0	13.5	5.3	12.9	333.8	1,162.5
Max.	90.0	493.8	63.7	471.2	0	88.8	7.1	58.1	499.6	2,840.5
Min.	53.2	0	58.9	4.4	0	0	2.0	0	190.4	4.1

Month	CABALLO (Capacity 402.9)		STORRIE (Capacity 28.7)		SANTA ROSA (Capacity 542.6)		LAKE SUMNER (Capacity 116.8)		BRANTLEY (Capacity 69.4)	
	2003	Average 1938-2003	2003	Average 1939-2003	2003	Average 1980-2003	2003	Average 1937-2003	2003	Average 1988-2003
Jan.	48.4	116.8	5.8	11.4	15.9	68.5	16.2	66.6	20.3	29.4
Feb.	63.0	148.1	5.5	11.4	16.1	67.6	17.9	70.7	17.0	32.4
Mar.	71.5	125.1	5.5	12.1	16.2	67.3	16.8	60.5	25.2	38.7
April	73.4	126.3	5.2	12.8	16.5	68.8	15.5	53.4	12.8	29.7
May	72.4	134.4	4.6	13.2	24.6	71.7	12.8	53.1	7.7	31.5
June	64.2	122.0	3.6	12.0	3.7	70.6	4.4	47.8	15.2	34.3
July	57.2	100.5	1.5	11.9	3.7	64.4	3.1	45.9	13.0	26.7
Aug.	16.5	70.7	1.0	12.3	3.9	65.4	2.5	48.5	7.5	27.2
Sept.	6.6	54.7	0.2	12.0	4.6	64.0	3.5	49.9	3.5	26.7
Oct.	9.1	64.0	0.2	11.4	6.0	65.7	6.8	51.4	8.5	22.3
Nov.	11.5	77.0	0.2	11.4	6.1	67.5	11.0	55.4	4.5	23.0
Dec.	13.8	94.8	0.2	11.3	6.3	68.5	14.1	60.9	7.6	24.2
Avg.	42.3	102.9	2.8	11.9	10.3	67.5	10.4	55.3	11.9	28.8
Max.	73.4	427.5	5.8	32.3	24.6	143.5	17.9	192.8	25.2	57.4
Min.	6.6	0	0.2	0	3.7	0	2.5	0.1	3.5	1.1

Month	RED BLUFF (Capacity 357.3)		DELTA LAKE (Capacity 30.8)						TOTAL IN U.S. RESERVOIRS (Capacity 7,458.4)	
	2003	Average 1936-2003	2003	Average 1939-2003					2003	Average Estimated
Jan.	71.8	118.9	1.5	18.8					1,056.8	2,335.7
Feb.	73.8	121.3	0.8	18.2					1,103.9	2,373.2
Mar.	74.6	118.6	0.5	17.5					1,122.1	2,308.9
April	72.7	105.5	9.1	17.8					1,122.1	2,335.8
May	72.2	104.9	12.5	18.2					1,171.5	2,596.2
June	70.3	105.9	10.5	18.3					1,036.2	2,627.4
July	67.1	96.6	8.3	18.3					875.3	2,424.9
Aug.	64.4	91.7	1.7	17.3					694.1	2,263.6
Sept.	62.2	95.4	1.6	18.6					671.0	2,189.0
Oct.	62.4	104.1	1.6	18.3					692.6	2,196.3
Nov.	67.8	108.7	1.7	18.5					719.2	2,230.5
Dec.	68.3	114.1	1.7	18.0					766.0	2,275.9
Avg.	69.0	107.1	4.3	18.2					919.2	2,346.4
Max.	74.6	404.0	12.5	27.9					1,171.5	
Min.	62.2	12.3	0.5	0					671.0	

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

STORED WATER IN LARGE RESERVOIRS OF THE RIO GRANDE BASIN
In Million Cubic Meters

In Mexico

	SAN GABRIEL (Capacity 255.4)		PICO DEL AGUILA (Capacity 50.0)		LA BOQUILLA (Capacity 2,903.4)		FRANCISCO I. MADERO (Capacity 348.0)		CHIHUAHUA (Capacity 25.8)	
Month	2003	Average 1980-2003	2003	Average 1993-2003	2003	Average 1914-2003	2003	Average 1948-2003	2003	Average 1961-2003
Jan.	79.2	143.6	41.8	19.9	893.8	1,767.1	234.6	252.9	5.6	9.4
Feb.	79.0	138.2	41.8	19.8	897.9	1,719.8	235.2	248.4	5.4	9.1
Mar.	78.1	128.9	34.6	16.8	829.5	1,643.2	210.3	231.7	5.3	8.5
April	76.4	117.8	28.6	13.1	741.9	1,545.5	193.1	196.2	5.1	8.1
May	77.6	102.4	23.1	12.1	661.8	1,449.0	160.1	163.8	4.6	7.4
June	81.0	95.7	20.8	12.5	594.4	1,364.3	130.0	140.8	4.4	7.0
July	84.9	109.4	23.9	14.4	559.7	1,404.6	111.9	161.6	5.7	7.4
Aug.	83.4	128.9	14.3	17.7	514.5	1,628.5	96.8	206.0	6.5	9.1
Sept.	94.1	143.0	23.2	18.2	646.0	1,831.4	172.9	244.9	7.5	11.0
Oct.	101.8	142.6	30.5	20.5	733.9	1,838.4	235.9	251.6	9.3	11.3
Nov.	101.6	141.5	31.8	21.0	732.1	1,806.4	237.5	252.8	9.1	10.4
Dec.	100.9	142.8	32.7	21.3	728.1	1,796.1	237.7	252.5	8.9	9.9
Avg.	86.5	127.9	28.9	17.3	711.1	1,649.5	188.0	216.9	6.5	9.1
Max.	101.8	4,720.0	41.8	48.3	897.9	3,402.1	237.7	452.2	9.3	32.7
Min.	76.4	19.8	14.3	6.3	514.5	20.8	96.8	1.7	4.4	0.2

	LUIS L. LEON (Capacity 336.7)		CENTENARIO and SAN MIGUEL (Capacity 45.8)		LA FRAGUA (Capacity 45.5)		VENUSTIANO CARRANZA (Capacity 1,384.2)		LAGUNA DE SALINILLAS (Capacity 19.0)	
Month	2003	Average 1968-2003	2003	Average 1934-2003	2003	Average 1991-2003	2003	Average 1930-2003	2003	Average 1931-2003
Jan.	161.9	436.8	36.9	19.7	45.5	34.2	36.6	575.9	6.6	9.8
Feb.	166.3	433.6	37.2	19.7	45.3	34.4	35.2	553.8	5.4	11.2
Mar.	151.5	413.5	35.7	16.9	45.1	31.6	33.7	516.4	4.4	10.1
April	136.6	386.6	30.7	15.0	43.3	30.4	32.5	503.3	2.9	11.3
May	122.3	359.0	29.4	15.2	42.8	29.1	33.3	480.3	2.4	11.2
June	116.1	338.2	33.4	13.6	42.0	27.8	25.4	458.5	5.6	10.4
July	116.4	350.7	36.4	12.9	45.5	27.9	71.5	470.4	4.3	10.1
Aug.	107.3	348.6	35.1	13.4	45.5	28.6	94.0	477.9	2.7	10.1
Sept.	107.0	402.4	38.5	15.4	45.7	30.5	147.1	535.8	2.5	10.5
Oct.	173.9	421.7	40.1	17.8	45.6	34.2	369.9	577.8	1.8	9.8
Nov.	181.6	430.0	42.1	18.4	45.6	34.7	447.4	588.2	7.3	9.4
Dec.	190.8	441.8	40.2	19.0	45.5	34.7	479.7	585.1	6.4	9.4
Avg.	144.3	396.9	36.3	16.4	44.8	31.5	150.5	527.0	4.4	10.3
Max.	190.8	928.9	42.1	43.0	45.7	46.2	479.7	1,435.0	7.3	39.0
Min.	107.0	4.7	29.4	0	42.0	8.6	25.4	1.2	1.8	0

	RODRIGO GOMEZ (Capacity 41.5)		EL CUCHILLO (Capacity 1,123.1)		MARTE R. GOMEZ (Capacity 995.0)		LAS BLANCAS (Capacity 83.8)		TOTAL IN MEXICAN RESERVOIRS (Capacity 7,657.2)	
Month	2003	Average 1963-2003	2003	Average 1994-2003	2003	Average 1943-2003	2003	Average 2001-2003	2003	Average Estimated
Jan.	39.4	32.0	1,059.8	365.8	562.6	671.7	33.3	33.2	3,237.6	4,371.9
Feb.	38.9	31.5	917.6	343.6	713.7	632.9	29.0	28.0	3,247.9	4,223.9
Mar.	36.9	30.2	923.4	335.9	708.0	606.2	26.9	26.1	3,123.4	4,016.0
April	34.9	29.3	917.6	325.8	603.6	548.9	32.5	28.0	2,879.7	3,759.3
May	35.8	28.5	902.6	315.0	423.0	490.3	29.5	25.9	2,548.3	3,489.3
June	33.6	28.0	923.4	313.1	381.6	495.1	52.5	28.1	2,444.2	3,333.2
July	31.2	27.9	928.0	308.2	429.9	494.7	44.5	28.6	2,493.8	3,428.7
Aug.	32.3	27.9	948.8	332.9	435.7	530.1	58.4	31.7	2,475.3	3,791.6
Sept.	39.1	31.7	1,210.7	454.3	891.8	671.8	72.6	57.6	3,498.7	4,458.5
Oct.	38.9	33.8	1,629.8	539.9	1,031.8	715.6	65.7	53.8	4,508.9	4,668.7
Nov.	38.4	33.8	1,707.9	539.1	1,015.9	729.2	65.5	48.4	4,663.8	4,663.2
Dec.	36.9	33.0	1,745.2	537.8	1,001.8	727.1	65.2	45.5	4,720.0	4,656.0
Avg.	36.4	30.6	1,151.2	392.6	683.3	609.5	48.0	36.2	3,320.1	4,071.7
Max.	39.4	45.4	1,745.2	1,745.2	1,031.8	1,308.0	72.6	72.6	4,720.0	
Min.	31.2	0	902.6	140.5	381.6	22.0	26.9	21.2	2,444.2	

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

STORED WATER IN LARGE RESERVOIRS OF THE RIO GRANDE BASIN
International Amistad Reservoir

Amistad Dam is the second of the major international storage dams constructed on the Rio Grande as authorized by the Water Treaty of 1944 between the United States and Mexico. It is located at river kilometer 924, 20.8 river kilometers upstream from Del Rio, Texas and Cd. Acuna, Coahuila.

Maximum storage for period of record: 5,994.6 million cubic meters on September 22, 1974 with an elevation of 346.150 meters above mean sea level, U. S. C. & G. S. datum.

Elevation Meters	Description	Storage Capacities (1992 Survey)			
		At Indicated Elevation		Between Indicated Elevations	
		Reservoir Capacity- Thousand Cubic Meters	Reservoir Area Hectares	Storage Volume- Thousand Cubic Meters	Type of Storage
273.710	Original River Bed at Dam Axis	0	0	0	
283.465	Lowest Outlet (United States Penstocks)	0	0	3,887,094	Silt & Conservation
340.462	Top of Conservation Storage *	3,887,094	26,077	2,138,052	Ordinary Flood
347.595	Top of Spillway Gates	6,025,146	34,124	499,553	Surcharge
349.025	Maximum Water Surface	6,524,699	35,770		

STORAGE IN MILLION CUBIC METERS AT 24:00 HOURS 2003 --- ANNUAL AND PERIOD SUMMARY												
Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,280.0	1,322.9	1,357.8	1,382.2	1,341.1	1,193.0	1,257.6	1,464.0	1,460.9	1,524.0	1,814.2	1,854.2
2	1,280.5	1,324.6	1,359.5	1,382.2	1,334.8	1,192.0	1,262.5	1,465.8	1,462.1	1,524.7	1,817.2	1,855.7
3	1,281.6	1,326.3	1,360.1	1,383.3	1,328.0	1,193.5	1,265.7	1,467.7	1,466.5	1,525.4	1,818.7	1,857.2
4	1,283.3	1,326.3	1,361.8	1,383.9	1,321.8	1,192.5	1,269.0	1,468.4	1,472.1	1,526.0	1,821.0	1,858.7
5	1,284.9	1,328.0	1,363.5	1,384.5	1,315.0	1,193.0	1,272.3	1,468.4	1,475.2	1,527.3	1,822.5	1,859.5
6	1,287.1	1,329.1	1,364.7	1,385.7	1,307.2	1,194.1	1,286.6	1,467.7	1,467.7	1,528.6	1,825.5	1,859.5
7	1,288.2	1,329.7	1,365.3	1,387.4	1,299.3	1,194.1	1,289.3	1,467.1	1,476.5	1,529.9	1,827.0	1,860.2
8	1,290.5	1,330.8	1,367.0	1,385.7	1,292.7	1,194.1	1,293.2	1,465.8	1,477.1	1,535.2	1,827.7	1,861.0
9	1,292.1	1,332.5	1,368.2	1,385.7	1,285.5	1,195.1	1,296.0	1,464.6	1,477.1	1,537.8	1,828.5	1,862.5
10	1,292.1	1,333.1	1,368.8	1,385.7	1,278.9	1,195.6	1,299.9	1,463.3	1,477.8	1,541.1	1,830.0	1,862.5
11	1,293.2	1,334.2	1,369.9	1,385.7	1,271.2	1,196.1	1,307.7	1,461.5	1,479.6	1,611.1	1,832.2	1,863.3
12	1,295.4	1,335.4	1,371.6	1,385.7	1,264.1	1,201.3	1,317.2	1,460.9	1,480.9	1,665.8	1,833.7	1,864.8
13	1,296.6	1,337.1	1,372.8	1,386.3	1,256.5	1,215.5	1,322.9	1,462.1	1,482.2	1,696.9	1,834.5	1,865.5
14	1,298.2	1,338.8	1,373.4	1,386.3	1,250.6	1,223.9	1,326.3	1,464.6	1,489.2	1,722.6	1,836.0	1,865.5
15	1,300.4	1,340.5	1,374.6	1,385.1	1,242.5	1,226.6	1,328.6	1,464.0	1,489.8	1,749.3	1,838.2	1,868.6
16	1,301.5	1,340.5	1,375.7	1,384.5	1,237.2	1,227.6	1,341.1	1,463.3	1,491.1	1,762.5	1,839.7	1,868.6
17	1,303.2	1,341.1	1,376.9	1,383.9	1,229.7	1,227.6	1,424.3	1,462.1	1,493.0	1,770.5	1,842.8	1,869.4
18	1,304.4	1,342.3	1,376.9	1,381.6	1,222.3	1,227.6	1,436.4	1,461.5	1,494.9	1,776.4	1,842.8	1,870.1
19	1,306.0	1,344.0	1,376.9	1,381.6	1,215.5	1,227.6	1,440.0	1,459.6	1,496.2	1,781.6	1,843.5	1,870.9
20	1,307.7	1,344.5	1,376.9	1,380.4	1,209.7	1,227.1	1,445.5	1,457.8	1,500.7	1,785.3	1,844.3	1,871.7
21	1,310.0	1,346.8	1,378.7	1,379.2	1,202.4	1,226.0	1,449.2	1,456.6	1,502.0	1,789.0	1,845.8	1,873.2
22	1,312.2	1,347.4	1,379.2	1,377.5	1,194.6	1,226.6	1,451.6	1,454.7	1,503.3	1,793.4	1,847.3	1,874.7
23	1,311.6	1,349.1	1,379.8	1,377.5	1,187.3	1,226.6	1,453.5	1,453.5	1,503.9	1,795.6	1,848.8	1,875.5
24	1,312.2	1,350.9	1,380.4	1,375.7	1,179.7	1,227.6	1,454.7	1,452.9	1,504.6	1,798.6	1,848.1	1,875.5
25	1,313.9	1,350.9	1,381.0	1,374.6	1,179.7	1,228.7	1,455.3	1,452.3	1,512.3	1,802.3	1,848.8	1,876.3
26	1,315.0	1,353.1	1,381.0	1,373.4	1,179.7	1,228.7	1,455.3	1,451.6	1,515.6	1,803.8	1,849.6	1,877.8
27	1,316.1	1,354.3	1,381.6	1,367.0	1,186.8	1,232.9	1,456.6	1,449.2	1,518.2	1,804.5	1,851.1	1,880.1
28	1,317.2	1,356.0	1,382.2	1,360.1	1,187.8	1,238.8	1,457.2	1,448.6	1,521.4	1,806.0	1,851.9	1,880.9
29	1,319.5	1,382.2	1,354.9	1,191.0	1,248.4	1,458.4	1,446.7	1,522.1	1,807.5	1,851.9	1,881.6	
30	1,320.6	1,382.2	1,348.0	1,192.0	1,254.4	1,459.6	1,451.0	1,523.4	1,809.8	1,852.6	1,881.6	
31	1,321.8	1,382.2	1,192.0			1,462.1	1,455.3		1,812.0		1,881.6	

Month	2003						Period 1969-2003			
	MOMENTARY MAXIMUM			MOMENTARY MINIMUM			Mean Monthly Storage			
	Elevation	Storage	Day	Elevation	Storage	Day	Average Storage	Average	Maximum	Minimum
Jan.	326.470	1,321.8	31	326.095	1,280.0	1	1,301.2	3,233.3	4,971.4	891.3
Feb.	326.770	1,356.0	28	326.480	1,322.9	1	1,338.9	3,224.0	4,952.1	971.6
Mar.	326.995	1,382.2	28	326.785	1,357.8	1	1,373.3	3,187.4	4,954.1	1,062.9
April	327.040	1,387.4	7	326.700	1,348.0	30	1,379.2	3,124.4	4,910.5	1,1

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

STORED WATER IN LARGE RESERVOIRS OF THE RIO GRANDE BASIN
International Falcon Reservoir

Falcon Dam is the lowermost of the major international storage dams authorized for construction on the Rio Grande by the Water Treaty of 1944 between the United States and Mexico and was the first dam constructed. It is located 139 river kilometers downstream from the old international highway bridge between Laredo, Texas and Nuevo Laredo, Tamaulipas and 442 river kilometers upstream from the Gulf of Mexico.

Maximum storage for period of record: 4,305.6 million cubic meters on October 19, 1958 with an elevation of 93.910 meters above mean sea level, U. S. C. & G. S. datum.

Elevation Meters	Description	Storage Capacities (1992 Survey)			
		At Indicated Elevation		Between Indicated Elevations	
		Reservoir Capacity- Thousand Cubic Meters	Reservoir Area Hectares	Storage Volume- Thousand Cubic Meters	Type of Storage
53.340	Original River Bed at Dam Axis	0	0	67	Dead
61.965	Lowest Outlet (Mexican Penstock)	67	10	3,273,351	Silt & Conservation
91.805	Top of Conservation Storage *	3,273,418	35,281	623,589	Ordinary Flood
93.480	Top of Spillway Gates	3,897,007	39,678	993,201	Surcharge
95.770	Maximum Water Surface	4,890,208	46,322		

STORAGE IN MILLION CUBIC METERS AT 24:00 HOURS 2003 --- ANNUAL AND PERIOD SUMMARY												
Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	882.6	881.9	895.5	881.1	565.8	445.6	438.9	491.1	496.0	734.0	1,338.3	1,404.6
2	881.9	883.3	897.7	879.0	553.0	445.2	442.5	488.2	500.9	736.5	1,340.0	1,404.6
3	880.4	884.0	897.7	874.7	538.3	442.9	442.9	485.8	505.8	738.4	1,342.9	1,407.5
4	879.7	881.9	898.4	871.9	529.0	440.7	451.5	482.9	511.8	741.0	1,344.8	1,408.5
5	879.0	884.0	902.0	866.2	518.8	439.3	458.0	478.6	517.8	742.3	1,347.6	1,409.5
6	879.7	886.2	900.6	863.4	509.8	437.1	467.7	476.7	527.0	743.5	1,350.5	1,409.5
7	879.0	886.2	900.6	860.6	498.9	436.2	477.6	472.9	532.1	746.1	1,355.3	1,409.5
8	877.6	887.6	901.3	854.9	487.2	434.0	480.5	469.1	537.3	748.7	1,356.2	1,409.5
9	879.0	887.6	900.6	848.6	476.2	432.2	487.2	466.3	539.3	751.3	1,359.1	1,411.5
10	877.6	887.6	901.3	844.5	467.3	429.1	493.0	464.5	540.4	753.8	1,361.0	1,411.5
11	879.0	887.6	900.6	839.6	458.0	432.7	496.9	462.6	541.4	756.4	1,362.9	1,411.5
12	879.7	887.6	800.6	834.1	447.9	445.2	499.9	461.2	564.7	817.6	1,365.8	1,413.4
13	879.0	887.6	902.0	827.2	443.8	452.9	500.9	460.7	570.1	921.8	1,376.4	1,411.5
14	879.0	890.5	902.0	819.0	440.7	456.6	501.9	465.4	577.7	1,063.3	1,380.3	1,409.5
15	879.7	895.5	902.0	809.4	437.1	458.9	500.9	472.0	584.8	1,154.5	1,382.2	1,409.5
16	880.4	894.8	901.3	798.7	433.1	462.1	499.9	477.2	591.4	1,201.6	1,384.1	1,413.4
17	880.4	894.1	901.3	782.6	430.0	464.5	500.4	480.5	595.3	1,238.2	1,390.0	1,412.5
18	879.7	896.2	902.0	767.5	428.7	466.3	499.9	482.4	599.7	1,262.7	1,392.9	1,414.4
19	880.4	897.7	902.0	751.3	426.5	467.7	499.9	482.9	605.3	1,278.3	1,393.9	1,413.4
20	880.4	898.4	902.0	737.1	424.8	467.3	499.4	483.9	612.7	1,291.2	1,393.9	1,413.4
21	881.9	899.1	900.6	721.9	423.0	466.8	499.9	484.8	642.0	1,298.7	1,394.9	1,414.4
22	882.6	896.2	900.6	705.7	420.4	465.4	500.9	485.3	658.4	1,303.3	1,397.8	1,416.4
23	880.4	896.2	899.1	693.4	418.3	463.5	501.9	485.8	670.3	1,306.1	1,399.7	1,416.4
24	881.9	898.4	898.4	681.2	415.7	461.2	501.9	486.7	680.0	1,308.9	1,399.7	1,416.4
25	881.9	894.8	898.4	665.6	414.4	458.0	500.9	487.2	689.1	1,317.3	1,400.7	1,416.4
26	882.6	894.1	897.7	647.2	413.5	454.7	499.9	487.2	691.5	1,323.0	1,401.7	1,416.4
27	880.4	893.4	897.7	628.1	413.5	450.2	498.9	487.2	695.8	1,323.9	1,403.6	1,417.4
28	880.4	894.1	896.2	612.1	417.0	445.6	496.9	486.7	706.3	1,326.8	1,402.6	1,418.4
29	881.9	894.1	594.2	420.9	443.4	495.5	488.2	720.7	1,327.7	1,402.6	1,416.4	
30	881.9	889.0	577.7	437.1	440.2	494.0	488.2	729.5	1,332.4	1,402.6	1,414.4	
31	883.3	885.4		444.3		493.0	491.6		1,336.2		1,414.4	

2003												Period 1954-2003					
Month	MOMENTARY MAXIMUM			MOMENTARY MINIMUM			Average Storage			Mean Monthly Storage							
	Elevation	Storage	Day	Elevation	Storage	Day	Average	Storage	Average	Maximum	Minimum						
Jan.	81.790	883.3	31	81.750	877.6	1 8	880.4	880.4	2,291.1	3,787.8	269.8						
Feb.	81.900	899.1	21	81.780	881.9	1 1	891.0	891.0	2,192.6	3,712.2	192.7						
Mar.	81.920	902.0	5	81.805	885.4	31	895.8	895.8	2,187.4	3,689.1	279.6						
April	81.775	881.1	1	79.360	577.7	30	771.3	771.3	2,084.0	3,644.4	336.5						
May	79.250	565.8	1	77.670	413.5	26	456.5	456.5	1,908.6	3,540.0	291.7						
June	78.275	467.7	19	77.850	429.1	10	450.2	450.2	1,832.7	3,440.3	293.2						
July	78.630	501.9	14	77.960	438.9	1	487.9	487.9	1,891.7	3,321.4	258.9						
Aug.	78.525	491.6	31	78.200	460.7	13	4										

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

QUALITY OF WATER - 2003

08-3640.00 RIO GRANDE AT EL PASO, TEXAS

LOCATION: At gaging station on Courchesne Bridge at river kilometer 2,021, 2.7 river kilometers upstream from American Dam, and 8.9 kilometers upstream from Paso del Norte Bridge between El Paso, Texas and Cd. Juarez, Chihuahua.

RECORDS: Chemical analyses, February 1930 through current year (prior to July 1986 sampling at American Dam); biochemical analyses, September 1943 through 1972 and February 1976 through current year (prior to 1976 samples taken from Franklin Canal at El Paso, Texas); specific conductance, 1930 through 1932 and 1937 through current year (prior to July 1986 samples taken at American Dam); suspended silt, 1947 through 1976 (samples taken at American Dam).

REMARKS: Sampling by International Boundary and Water Commission, U.S. Section; chemical and biochemical analyses by Haskell R. Street Wastewater Treatment Plant laboratory in El Paso; specific conductance determinations by the International Boundary and Water Commission, U.S. Section. Additional water quality parameters determined by the Haskell R. Street Wastewater Treatment Plant.

2003 Date	Time Standard	Streamflow Momentary CMS	Specific Conductance Micro- siemens /cm	pH Units	Water Temper- ature Deg C	Hardness, Total mg/L	Oxygen Dissolved (DO) mg/L	Coliform Fecal Colonies/ 100/ml	Oxygen Demand Bio- Chemical (BOD) mg/L
Jan. 21	0730	2.18	2,290	7.9	9.2	417	8.3	288	3
Feb. 18	0930	NR	2,330	8.0	14.0	427	8.8	118	<2
Mar. 18	0715	NR	2,800	7.8	9.5	442	8.6	648	6
Apr. 15	0800	4.28	1,980	8.0	16.8	352	8.6	76	4
May 20	0825	NR	1,750	8.1	18.0	262	7.1	NR	7
June 24	0830	NR	1,200	8.4	22.4	263	6.5	NR	<2
July 15	0900	11.8	1,100	8.2	23.6	284	4.9	4600	6
Aug. 19	0825	NR	1,010	8.3	25.8	220	6.4	280	3
Sept. 23	0910	5.69	1,460	8.7	20.3	272	7.8	300	1
Oct. 21	0830	NR	3,970	7.6	16.2	526	6.3	300	8
Nov. 18	0825	0.37	3,590	6.9	11.1	631	7.7	200	8
Dec. 16	0845	NR	NR	8.5	4.6	709	5.2	230	5

NR - None Reported

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

QUALITY OF WATER - 2003

08-3640.00 RIO GRANDE AT EL PASO, TEXAS

2003 Date	Chloride	Solids Dissolved Total	Sulfate ion (SO ₄) Dissolved	Ammonia	Sodium
Jan. 21	277	1,460	445	0.40	332
Feb. 18	316	1,530	462	0.70	359
Mar. 18	400	1,760	570	0.60	437
Apr. 15	255	1,150	341	0.20	284
May 20	217	1,070	330	0.40	258
June 24	128	742	202	0.20	154
July 15	116	700	192	0.20	NR
Aug. 19	89	588	165	0.10	124
Sept. 23	177	854	253	<0.50	207
Oct. 21	684	2,580	762	4.20	669
Nov. 18	752	2,870	875	5.30	762
Dec. 16	592	3,060	712	1.20	791

NR - None Reported

SPECIFIC CONDUCTANCE OF WATER SAMPLES IN MICROSIEMENS/CM @ 25 DEG C - 2003

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1												1,160
2										1,160	1,170	1,180
3									1,170		1,170	1,170
4										1,160		1,160
5												
6									1,160			
7									1,170	1,160		
8											1,160	
9										1,170		
10										1,180	1,160	1,200
11											1,170	1,170
12												
13											1,190	
14											1,180	
15												
16										1,180	1,170	1,210
17										1,200		
18											1,160	
19												
20												
21											1,160	
22												
23												
24												
25												
26											1,180	
27											1,160	
28											1,170	
29												1,200
30												
31												

No samples, January - September

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

QUALITY OF WATER - 2003

RIO GRANDE ABOVE HASSELL R. STREET WASTEWATER TREATMENT PLANT

LOCATION: Rio Grande 2.4 kilometers upstream from Haskell R. Street Wastewater Treatment Plant outfall. This monitoring station is located in TCEQ Segment 2308 downstream of the International Dam. The river bank has been stabilized in this area by lining the bank with concrete to prevent movement of the bank.

RECORDS : Chemical analyses, February 1930 through current year. Biochemical analyses 1976 through current year.

REMARKS : Samples collected by the International Boundary and Water Commission, U.S. Section and analyzed by the El Paso Water Utilities Laboratory. Additional water quality parameters determined by the Haskell R. Street Wastewater Treatment Plant laboratory in El Paso, Texas.

2003	Time	Streamflow Momentary	Specific Conductance Micro-siemens /cm	pH	Water Temper- ature	Hardness, Total mg/L	Oxygen Dissolved (DO) mg/L	Coliform Fecal Colonies/ 100/ml	Oxygen Demand Bio- Chemical (BOD) mg/L
Date	Standard	CMS	Units	Deg C					
Jan. 21	1015	NR	2,650	8.4	8.5	428	11.1	>2,000	6
Feb. 18	0945	NR	2,550	7.9	11.3	396	10.6	96	<2
Mar. 18	0945	NR	2,840	8.4	7.0	414	11.1	96	5
June 24	0900	NR	NR	NR	NR	282	NR	10	3
July 15	0930	NR	NR	NR	NR	NR	NR	NR	NR
Sept. 23	0945	NR	1,360	8.4	21.1	257	7.9	400	1
Oct. 21	0910	NR	3,220	7.9	17.4	340	9.7	100	4

NR - None Reported

2002	Chloride	Solids Dissolved Total	Sulfate ion (SO ₄) Dissolved	Ammonium	Sodium
Date					
Jan. 21	344	1,660	531	0.80	387
Feb. 18	361	1,670	523	0.50	408
Mar. 18	423	1,790	591	0.60	460
June 24	306	1,100	287	NR	276
July 15	NR	NR	NR	NR	NR
Sept. 23	165	856	251	<0.05	200
Oct. 21	457	1,710	494	<0.05	468

NR - None Reported

RIO GRANDE DOWNSTREAM FROM HASSELL R. STREET WASTEWATER TREATMENT PLANT

LOCATION: Rio Grande 1.3 kilometers downstream from Haskell R. Street Wastewater Treatment Plant Outfall. This monitoring station is located in the Texas Commission on Environmental Quality Segment 2308.

RECORDS : Chemical and biochemical analyses 1976 through current year.

REMARKS : Samples collected by the International Boundary and Water Commission, U.S. Section and analyzed by El Paso Water Utilities laboratory in El Paso, Texas.

2003	Time	Streamflow Momentary	Specific Conductance Micro-siemens /cm	pH	Water Temper- ature	Oxygen Dissolved (DO) mg/L	Coliform Fecal Colonies/ 100/ml	Hardness Total mg/l	Oxygen Demand Bio- Chemical (BOD) mg/L
Date	Standard	CMS	Units	Deg C					
Jan. 21	0930	NR	2,630	8.3	9.3	12.1	288	435	5
Feb. 18	0935	NR	2,390	8.5	13.0	15.1	121	392	4
Mar. 18	0915	NR	2,850	8.6	6.2	12.2	83	464	72
May 20	0910	NR	3,890	8.5	15.1	9.0	NR	518	7
June 24	0830	NR	NR	NR	NR	NR	<10	275	8
Sept. 23	0915	0.43	1,390	8.6	21.3	8.0	100	249	2
Oct. 21	0945	NR	3,200	8.1	15.6	11.6	300	347	3
Oct. 28	NR	NR	NR	NR	NR	NR	NR	NR	NR

NR - None Reported

2003	Chloride ion Dissolved mg/L	Solids Dissolved Total mg/L	Sulfate ion (SO ₄) Dissolved mg/L	Ammonia mg/L	Sodium mg/L
Date					
Jan. 21	341	1,600	519	0.70	380
Feb. 18	339	1,560	486	0.50	379
Mar. 18	428	1,810	595	0.20	463
May 20	603	2,540	766	NR	NR
June 24	408	1,270	317	NR	354
Sept. 23	158	868	239	<0.50	198
Oct. 21	449	1,660	490	<0.50	468
Oct. 28	459	1,740	548	<0.05	NR

NR - None Reported

WATER BULLETIN 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

QUALITY OF WATER - 2003

RIO GRANDE AT RIVERSIDE CANAL HEADING NEAR EL PASO, TEXAS, AND CD. JUAREZ, CHIHUAHUA

LOCATION: Rio Grande at Riverside Canal, 1.8 kilometers downstream from Zaragoza International Bridge, located at river kilometer 1991 and 26.8 kilometers downstream from American Dam at El Paso, Texas.

RECORDS: Biochemical analyses, February 1976 through current year. Samples also collected quarterly by the Texas Commission on Environmental Quality.

REMARKS: Sampling by the International Boundary and Water Commission, U.S. Section. Analyses by the Haskell R. Street Wastewater Treatment Plant laboratory in El Paso, Texas.

2003	Time	Streamflow Momentary	Specific Conductance Micro-siemens /cm	pH	Water Temper- ature Deg C	Oxygen Dissolved (DO) mg/L	Coliform Fecal Colonies/ 100/ml	Hardness Total mg/l	Oxygen Demand Bio- Chemical (BOD) mg/L
Date	Standard	CMS	Units						
Apr. 15	0930	NR	1,770	8.1	19.4	8.0	NR	289	4
June 19	1440	0.18	1,160	8.5	27.0	8.5	NR	NR	NR
June 24	0945	NR	1,290	8.3	25.0	8.4	210	258	4
Aug. 19	0930	NR	1,000	8.4	26.4	NR	320	228	3

NR - None Reported

No samples collected for Jan., Feb., March, May, July, Sept., Oct., Nov. and Dec. - No flow.

2003	Chloride mg/L	Solids Dissolved Total mg/L	Sulfate ion (SO ₄) Dissolved mg/L	Ammonia mg/L	Alkalinity
Date					
Apr. 15	241	1,020	272	<1	194
June 19	128	728	199	<1	170
June 24	156	742	201	<1	180
Aug. 19	94	602	162	<1	166

NR - None Reported

RIO GRANDE AT ALAMO GRADE CONTROL STRUCTURE

LOCATION: Rio Grande at Alamo Control Structure, 9.7 kilometers upstream of Fort Hancock Port of Entry. Water in this area is influenced by return inflows coming into the river from agriculture and municipalities.

RECORDS : Samples collected by the International Boundary and Water Commission, U.S. Section and analyzed by by the El Paso Water Utilities laboratory in El Paso, Texas. Period of record: 1997 - Present.

REMARKS : Additional water quality parameters including heavy metals, nutrients, pesticides, and other biological indices determined by the El Paso Water Utilities laboratory in El Paso, Texas.

2003	Time	Streamflow Momentary	Specific Conductance Micro-siemens /cm	pH	Water Temper- ature Deg C	Oxygen Dissolved (DO) mg/L	Coliform Fecal Colonies/ 100/ml	Hardness Total mg/l	Oxygen Demand Bio- Chemical (BOD) mg/L
Date	Standard	CMS	Units						
Jan. 21	0925	0.46	2,440	8.4	7.6	10.9	NR	NR	NR
Jan. 28	1025	0.18	2,490	8.7	7.1	11.4	1,030	NR	NR
Feb. 18	0801	0	NR	7.8	10.5	8.2	NR	NR	NR
Mar. 18	0730	0	2,960	NR	NR	NR	NR	NR	NR
Apr. 15	0830	NR	2,080	8.2	17.0	8.4	NR	376	4
May 20	0845	0	2,520	7.4	16.0	4.3	NR	NR	NR
Oct. 08	0955	0	2,490	7.6	19.6	7.5	>2,400	NR	NR
Nov. 19	1010	0.51	1,880	7.8	12.3	0.9	>2,400	NR	NR

NR - None Reported

2003	Chloride ion Dissolved mg/L	Solids Dissolved Total mg/L	Sulfate ion (SO ₄) Dissolved mg/L	Ammonia mg/L	Sodium mg/L
Date					
Jan. 21	NR	NR	NR	NR	NR
Jan. 28	403	1,600	426	6	NR
Feb. 18	NR	NR	NR	NR	NR
Mar. 18	NR	NR	NR	NR	NR
Apr. 15	323	1,320	356	<1	313
May 20	NR	NR	NR	NR	NR
Oct. 08	400	1,500	384	<1	NR
Nov. 19	239	1,060	183	28	NR

NR - None Reported

WATER BULLETIN 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

QUALITY OF WATER - 2003

08-3715.00 RIO GRANDE ABOVE RIO CONCHOS NEAR PRESIDIO, TEXAS AND OJINAGA, CHIHUAHUA

LOCATION: Gaging station at river kilometer 1,555; 10.5 river kilometers upstream from the Rio Conchos.
 RECORDS : Chemical analyses, February 1933 through 1981; specific conductance, 1931 and 1935 through current year.

REMARKS : Sampling by the International Boundary and Water Commission, U.S. Section; a portion of data results and analyses were performed by the USGS and funded through the National Stream Quality and Accounting Network (NASQAN). Determinations for specific conductance by the International Boundary and Water Commission, U.S. Section. Results of biochemical analyses by the International Boundary and Water Commission, U.S. Section and the Texas Commission on Environmental Quality, November 1977 through current year, available upon request.

SPECIFIC CONDUCTANCE OF WATER SAMPLES IN MICROSIEMENS/CM @ 25 DEG C - 2003

January		March		May		July		September		November	
6	3,140 3,720	3	3,040 3,920	5	4,020 4,600	7	4,040 4,020	2	910 3,140	3	2,760 3,010
30		25		14		15		23		16	
February		April		June		August		October		December	
6	4,030	2	4,800 4,720	4	3,490 4,960	5	4,040 550	2	1,560 840 2,060	1	2,760 4,420
		21		18		20		9		15	

2003	Time	Streamflow Momentary	Specific Conductance Micro- siemens /cm	pH	Water Temper- ature	Oxygen Dissolved (DO)	Coliform Fecal Colonies/ 100/ml	Total Suspended Solids	Volatile Suspended Solids
Date	Standard	CMS	Units	Deg C	mg/L			mg/l	mg/L
Jan. 27	0730	2.92	3,510	7.3	9.0	9.0	47	90	18
Feb. 25	0830	3.59	3,630	7.1	10.8	9.2	73	468	42
Mar. 19	0800	1.10	3,510	7.2	14.5	8.6	80	96	17
Apr. 15	0815	0.21	5,000	8.0	21.6	7.3	40	81	9
May 13	0830	0.08	3,620	7.5	23.0	7.0	120	144	78
June 23	1030	0.20	3,300	7.1	28.0	6.2	67	44	10
Aug. 12	0835	0.40	980	7.8	25.9	5.9	NR	211	23
Sept. 9	0820	0.28	2,480	7.9	25.8	6.9	NR	60	6
Dec. 16	0830	0.04	NR	NR	NR	NR	NR	NR	NR

2003	Chloride	Solids Dissolved Total mg/l	Sulfate ion (SO ₄) Dissolved mg/l	Alkalinity mg/l	Total Organic Carbon mg/l
Date	mg/L	mg/l			
Jan. 27	670	2,320	658	205	5.9
Feb. 25	981	888	1,270	207	5.3
Mar. 19	1,040	6,740	913	238	6.2
Apr. 15	854	3,170	1,020	266	6.0
May 13	865	3,370	1,130	134	7.6
June 23	1,300	3,770	1,980	272	14.9
Aug. 12	65	688	318	88	5.0
Sept. 9	356	1,770	760	172	4.0
Dec. 16	838	3,750	1,270	298	5.0

NR - None Reported

WATER BULLETIN 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

QUALITY OF WATER - 2003

08-3730.00 RIO CONCHOS NEAR PRESIDIO, TEXAS AND OJINAGA, CHIHUAHUA

LOCATION: At gaging station 2.5 kilometers from the confluence with the Rio Grande, located at river kilometer 1,547.
 RECORDS : Chemical analyses, February 1935 through 1981; suspended silt, 1956 through 1979, specific conductance, 1935 through 2002.
 REMARKS : Sampling and determinations for specific conductance by the International Boundary and Water Commission, U.S. Section.

SPECIFIC CONDUCTANCE OF WATER SAMPLES IN MICROSIEMENS/CM @ 25 DEG C - 2003						
January	March	May	July	September	November	
February	April	June	August	October	December	
No samples collected for 2003						

08-3742.00 RIO GRANDE BELOW RIO CONCHOS NEAR PRESIDIO, TEXAS AND OJINAGA, CHIHUAHUA

LOCATION: Gaging station at river kilometer 1,259; 0.6 river kilometers downstream from Alamito Creek and 18.7 river kilometers downstream from the Rio Conchos.
 RECORDS : Specific conductance, 1956 through current year.
 REMARKS : Sampling by the International Boundary and Water Commission, U.S. Section and the Texas Commission on Environmental Quality. Analyses by a contract laboratory. Analyses November 1977 through current year, available upon request.

2003	Time	Streamflow Momentary	Specific Conductance Micro- siemens /cm	pH	Water Temper- ature	Dissolved (DO)	Oxygen mg/L	Coliform Fecal Colonies/ 100/ml	Total Suspended Solids mg/l	Volatile Suspended Solids mg/L
Date	Standard	CMS	Units	Deg C	mg/L					
Jan. 27	0815	3.09	3,310	7.3	9.0	9.2	3,750	69	17	
Feb. 25	0950	3.58	2,690	7.4	9.2	8.9	3,700	292	23	
Mar. 19	0930	1.77	2,610	7.2	14.5	8.6	175	67	11	
Apr. 15	0910	0.49	3,890	7.8	21.7	4.7	40	115	12	
May 13	0950	0.36	3,610	7.8	24.0	6.9	150	24	<4	
June 23	1150	0.37	2,990	7.4	28.5	7.1	75	90	13	
Aug. 12	1000	2.04	1,080	7.8	26.4	6.0	NR	518	29	
Sept. 9	0920	1.88	2,600	7.8	26.9	10.1	NR	120	16	
Nov. 18	1000	1.70	3,290	7.5	16.4	6.2	150	3	<1	
Dec. 16	0940	1.24	3,140	8.0	9.6	10.6	NR	NR	NR	

2003	Chloride	Solids Dissolved Total	Sulfate ion (SO ₄) Dissolved	Ammonia	Total Organic Carbon
Date	mg/L	mg/l	mg/l	mg/l	mg/l
Jan. 27	575	2,100	660	<0.020	5.4
Feb. 25	1,490	2,410	1,800	0.200	5.1
Mar. 19	800	2,440	956	<0.000	5.5
Apr. 15	802	3,280	943	0.100	6.0
May 13	120	508	118	NR	10.4
June 23	610	2,000	775	<0.000	7.9
Aug. 12	473	1,800	527	0.200	7.0
Sept. 9	400	1,600	545	0.300	8.2
Nov. 18	275	2,320	850	0.140	4.3
Dec. 16	NR	NR	NR	NR	NR

NR - None Reported

SPECIFIC CONDUCTANCE OF WATER SAMPLES IN MICROSIEMENS/CM @ 25 DEG C - 2003						
January	March	May	July	September	November	
7 3,310	5 3,290	7 3,810	2 1,360	2 1,230	3 2,960	
	25 4,590		15 2,060	23 2,920	19 3,120	
February	April	June	August	October	December	
2 3,840	3 3,700	2 2,500	5 2,090	2 2,720	2 3,150	
17 4,570	15 5,050	16 2,320	18 3,020	9 2,360	15 2,880	
	17 4,550	25 944		20 2,360		

WATER BULLETIN 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION
QUALITY OF WATER - 2003

RIO GRANDE AT RIO GRANDE VILLAGE IN BIG BEND NATIONAL PARK

LOCATION: This station is located within the National Park and is directly across at the town of Boquillas in Coahuila, Mexico. The Maderas del Carmen protected area is also located in this area.

RECORDS : Period of record: 1999 - Present.

REMARKS : Samples collected by the National Park Service. Analyses determined by a contract laboratory.

2003	Time	Streamflow Momentary	Specific Conductance Micro- siemens /cm	pH	Water Temper- ature Deg C	Oxygen Dissolved (DO) mg/L	Fecal Coliform MPN/ 100/ml	Total Suspended Solids mg/l	Volatile Suspended Solids mg/L
Date	Standard	CMS	Units						
Jan. 22	0830	5.24	2,790	8.1	15.4	12.5	NR	161	28
Feb. 25	0900	NR	1,170	7.8	11.5	9.1	65	982	755
Mar. 3	1100	NR	1,340	7.6	19.6	7.8	NR	NR	NR
May 6	1015	NR	1,620	7.9	25.6	6.1	NR	19	<4

NR - None Reported

2003	Chloride mg/L	Solids Dissolved Total mg/l	Sulfate ion (SO ₄) Dissolved mg/l	Ammonia mg/l	Total Organic Carbon mg/l
Date					
Jan. 22	620	2,040	673	<0.020	8.7
Feb. 25	105	431	609	<0.020	3.7
Mar. 3	NR	1,030	NR	0.200	8.3
May 6	90	945	314	<0.020	8.7

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION
QUALITY OF WATER - 2003

08-3772.00 RIO GRANDE AT FOSTER RANCH NEAR LANGTRY, TEXAS AND RANCHO SANTA ROSA, COAHUILA

LOCATION: Gaging station at river kilometer 1,058, about 20.8 kilometers west of Langtry, Texas.
RECORDS : Chemical analyses, March 1969 through 1970 and October 1974 through current year; biochemical, October 1974 through 1995; suspended silt, 1969 through current year; specific conductance, 1969 through 1981, 1983, 1985 through current year.

REMARKS : A portion of the data results and analyses were performed by the U. S. Geological Survey and funded through National Stream Quality and Accounting Network (NASQAN); sampling and determinations for suspended silt and specific conductance by the International Boundary and Water Commission, U.S. Section. Additional water quality parameters including heavy metals, nutrients, and biological indices, determined and published by the USGS.

2003 Date	Time Std.	Stream flow, Momen- tary *	Specific Conduct- ance Micro- siemens	pH	Water Temper- ature Deg C	Hard- ness, Total (as CaCO ₃) mg/L	Hard- ness, Noncar- bonate (as CaCO ₃) mg/L	Calci- um (Ca), Dis- solved mg/L	Magne- sium (Mg), Dis- solved mg/L	Sodium ion (Na), Dis- solved mg/L	Sodium Adsorp- tion Ratio (SAR)	Potassium ion (K) Dissolved mg/L
		CMS	Units									
Jan. 14	1200	13.2	1,850	8.5	13.2	380	220	100	31	247	6	7.0
Mar. 12	1100	6.92	1,050	8.2	21.4	340	190	101	21	90	2	4.9
Apr. 16	1030	5.86	950	8.2	22.3	260	130	65	25	96	3	4.7
May 21	1130	5.85	726	8.1	22.3	240	80	78	11	61	2	5.5
July 22	1120	24.1	745	7.8	27.8	220	120	76	7	73	2	5.1
Aug. 27	1110	9.02	674	7.7	26.4	240	150	74	13	44	1	5.1
Nov. 19	1030	NR	1,180	8.2	15.5	370	220	103	26	132	3	5.5

2003 Date	Alka- linity Total (as CaCO ₃) mg/L	Sulfate ion (SO ₄) Dis- solved mg/L	Chloride ion (Cl), Dis- solved mg/L	Silica (SiO ₂), Dis- solved mg/L	Oxygen, Dis- solved (DO) mg/L	coli- form, Fecal Colonies/ 100 mL	Tur- bidity NTU	Solids Dis- solved (Calcu- lated) mg/L	Solids Dis- solved (Residue @ 180 Deg C) mg/L	Sus- pended Sedi- ment mg/L
	mg/L	mg/L	mg/L	mg/L	mg/L			mg/L	mg/L	
Jan. 14	163	358	275	10.0	9.8	NR	44	1,130	1,210	52
Mar. 12	153	263	78	18.1	8.1	NR	92	676	702	131
Apr. 16	137	204	86	16.7	7.1	NR	34	585	606	48
May 21	162	116	55	20.0	6.7	NR	220	452	483	276
July 22	96	228	14	16.0	6.0	NR	10,000	484	503	17,200
Aug. 27	86	181	33	13.0	5.5	NR	530	419	433	483
Nov. 19	145	306	109	20.3	8.5	NR	73	795	802	30

* Flow provided by the US Geological Survey

NR- None Reported

SUSPENDED SILT - 2003											
2003 Date	Time Std.	Stream- flow, Momen- tary	Gravimetric Percent	2003 Date	Time Std.	Stream- flow, Momen- tary	Gravimetric Percent	2003 Date	Time Std.	Stream- flow, Momen- tary	Gravi- metric Percent
		CMS				CMS				CMS	
Jan. 06	1030	11.4	0.0060	May 19	1000	8.89	0.0953	Oct. 06	0935	7.87	0.0317
Jan. 17	1040	12.6	0.0077	June 02	1130	15.6	0.0298	Oct. 20	1000	24.0	0.1818
Feb. 03	1050	9.65	0.0830	June 17	1115	14.6	0.5990	Nov. 03	1030	12.1	0.0113
Feb. 14	0955	8.81	0.0065	July 07	1000	19.5	0.7678	Nov. 17	1035	11.0	0.0075
Mar. 03	1055	10.8	0.0371	July 21	1100	28.9	3.3532	Dec. 01	1030	8.85	0.0047
Mar. 17	1240	9.50	0.0055	Aug. 04	0930	25.0	1.5225	Dec. 15	1045	8.92	0.0032
Apr. 07	1000	6.00	0.0030	Aug. 18	1005	9.63	0.0218				
Apr. 22	1000	5.64	0.0067	Sep. 08	1030	12.3	0.4572				
May 05	0945	5.24	0.0033	Sep. 22	0940	9.49	1.1215				

08-3772.00 RIO GRANDE AT FOSTER RANCH NEAR, LANGTRY, TEXAS AND RANCHO SANTA ROSA, COAHUILA

SPECIFIC CONDUCTANCE OF WATER SAMPLES IN MICROSIEMENS/CM @ 25 DEG C - 2003

SPECIFIC CONDUCTANCE OF WATER SAMPLES IN MICROSIEMENS/CM @ 25 DEG C - 2003											
January			March			May			July		
4	1,690	1,890	3	2,220	986	6	1,380	537	7	652	1,200
17			17			19			21		
February			April			June			August		
3	1,600	1,470	7	858	942	2	912	738	18	765	917
14			22			17			20		
September			October			November			December		
9			6	1,090	709	22			15	1,110	1,120
17									15	1,110	1,060

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

QUALITY OF WATER - 2003

08-4474.10 PECOS RIVER NEAR LANGTRY, TEXAS

LOCATION: At gaging station, 24.1 river kilometers from the confluence with the Rio Grande, which is located at river kilometer 991.4.

RECORDS : Chemical analyses, 1967 through current year; biochemical analyses, October 1974 through 1995; suspended silt, November 1954 through 1976; specific conductance daily, 1969 through September 1985 and biweekly through current year.

REMARKS : A portion of the data results and analyses were performed by U.S. Geological Survey and funded through the National Stream Quality and Accounting Network (NASQAN); sampling and determinations for specific conductance by the International Boundary and Water Commission, U.S. Section. Additional water quality parameters including heavy metals, nutrients, pesticides and other biological indicies determined by the U.S. Geological Survey.

2003 Date	Time Std.	Stream flow, Momen- tary *	Specific Conduct- ance Micro- siemens	pH	Water Temper- ature Deg C	Hard- ness, Total (as CaCO ₃)	Hard- ness, Noncar- bonate (Ca), (as CaCO ₃)	Calci- um ion (Ca), Dis- solved mg/L	Magne- sium ion (Mg), Dis- solved mg/L	Sodium ion (Na), Dis- solved mg/L	Potassium ion (K) Dissolved mg/L	
						mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	
Jan. 13	1400	4.63	3,020	8.4	10.7	620	440	139	66	391	7	6.7
Mar. 11	1400	3.68	3,400	8.2	20.7	670	520	143	74	458	8	7.8
Apr. 15	1330	3.24	3,370	8.2	22.3	650	530	136	74	436	7	6.8
May 20	1300	3.23	3,050	8.2	28.2	560	460	113	66	407	8	8.1
July 15	1230	2.67	2,470	8.0	31.5	480	370	98	55	350	7	6.8
Aug. 26	1200	2.26	2,180	8.2	29.2	390	280	79	46	263	6	5.7
Nov. 17	1230	NR	2,090	8.2	18.9	470	300	113	46	250	5	5.8

2003 Date	Alka- linity Total (as CaCO ₃)	Sulfate ion (SO ₄) Dis- solved	Chloride ion (Cl), Dis- solved	Silica (SiO ₂), Dis- solved	Oxygen, Dis- solved (DO)	Coli- form, Fecal Colonies/ 100 mL	Tur- bidity NTU	Solids Dis- solved (Calcu- lated)	Solids Dis- solved (Residue @ 180 Deg C)	Solids Dis- solved (Deg C)	Sus- pended Sedi- ment
								mg/L	mg/L	mg/L	mg/L
Jan. 13	180	384	657	13.4	10.3	NR	2.6	1,770	1,890	<1	
Mar. 11	143	441	779	9.4	8.6	NR	1.2	2,000	2,070	1	
Apr. 15	121	438	780	8.8	8.6	NR	1.1	1,960	2,080	1	
May 20	94	386	682	11.9	7.4	NR	1.2	1,730	1,850	2	
July 15	104	306	530	13.8	6.5	NR	1.5	1,420	1,450	1	
Aug. 26	104	270	458	16.1	7.2	NR	1.2	1,200	1,290	2	
Nov. 17	174	251	411	17.3	8.4	NR	<2.0	1,210	1,240	3	

* Flow provided by the US Geological Survey

NR - None Reported

SPECIFIC CONDUCTANCE OF WATER SAMPLES IN MICROSIEMENS/CM @ 25 DEG C - 2003												
January		March		May		July		September		November		
6 17	2,790 2,870	3 17	3,280 3,260	5 19	3,090 3,010	7 21	2,200 2,220	8 22	1,970 1,950	3 17	1,950 1,940	
February	3,040 3,140	7 21	3,390 3,250	3 16	2,650 1,200	4 17	2,220 2,140	6 17	2,870 2,280	1 14	2,100 2,160	December

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

QUALITY OF WATER - 2003

08-4494.00 DEVILS RIVER AT PAFFORD CROSSING NEAR COMSTOCK, TEXAS

LOCATION: At gaging station 41.0 river kilometers from the confluence with the Rio Grande, which is located at river kilometer 925.

RECORDS : Daily specific conductance, 1968 through September 1985; weekly or biweekly specific conductance through current year.

REMARKS : Sampling and determinations for specific conductance by the U. S. Geological Survey through September 1985. Sampling prior to 1978 and since October 1985 by the International Boundary and Water Commission, U.S. Section. Chemical and biochemical analyses, 1978 through 1985 available from the USGS. A portion of the data results and analyses were performed by the USGS and funded through the National Stream Quality and Accounting Network (NASQAN).

SPECIFIC CONDUCTANCE OF WATER SAMPLES IN MICROSIEMENS/CM @ 25 DEG C - 2003																	
January			March			May			July			September			November		
6	404	397	3	436	450	5	431	382	7	392	362	3	378	386	17	367	
17	397		17	450		19	382		21	362		8	366				
3	458	414	7	421	412	2	366	353	4	376	427	6	403	389	1	399	
14	414		21	412		16			18			20			16	392	

08-4509.00 RIO GRANDE BELOW AMISTAD DAM NEAR CD. ACUNA, COAHUILA AND DEL RIO, TEXAS

LOCATION: Gaging station at river kilometer 920.3, 3.4 river kilometers downstream from Amistad Dam.

RECORDS : Chemical analyses, July 1968 through current year; suspended silt, 1969 through 1976; specific conductance 1968 through current year.

REMARKS : A portion of the data results and analyses were performed by the U.S. Geological Survey and funded through the National Stream Quality and Accounting Network (NASQAN). Sampling and determinations for specific conductance by the International Boundary Water Commission, U.S. Section.

2003	Time	Streamflow Momentary	Specific Conductance Micro- siemens /cm	pH	Water Temper- ature	Total Organic Carbon	Ammonia	Calcium ion (Ca), Dissolved	Magnesium ion (Mg), Dissolved
Date	Standard	CMS	Units	Deg C	mg/L	mg/L	mg/L	mg/L	mg/L
Jan. 15	1340	16.0	952	7.9	11.4	2	<0.02	97	26
Mar. 4	1157	16.7	972	7.9	14.4	2	0.09	NR	NR
Apr. 17	0830	31.9	1,010	8.0	14.8	2	0.03	71	20
May 22	1000	107	1,010	7.8	18.3	2	<0.04	69	21
June 16	1800	NR	1,020	8.1	25.5	NR	NR	NR	NR
July 22	1210	15.6	965	8.4	21.3	4	0.10	68	19
Aug. 28	0950	33.1	996	7.3	20.6	NR	NR	68	21
Oct. 27	1715	NR	855	8.6	19.7	3	<0.05	NR	NR
Nov. 18	0930	NR	818	8.0	19.4	3	0.03	65	18
Dec. 4	1600	NR	NR	NR	2		0.05	NR	NR

2003	Sodium ion (Na), Dissolved	Sediment Suspended Total	Volatile Suspended Sediment	Alkalinity Total (as CaCO ₃)	Sulfate ion (SO ₄), Dissolved	Chloride ion (Cl), Dissolved	Silica (SiO ₂), Dissolved	Solids Dissolved (Calculated)
Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Jan. 15	130	4	<1	120	183	118	18	638
Mar. 4	NR	11	2	130	177	115	NR	586
Apr. 17	101	NR	NR	123	179	129	13	596
May 22	104	NR	NR	125	170	123	13	584
June 16	NR	3	<1	128	176	123	NR	628
July 22	99	4	<4	127	115	82	15	559
Aug. 28	93	NR	NR	122	163	126	15	564
Oct. 27	NR	7	2	120	148	94	NR	NR
Nov. 18	81	NR	NR	112	142	97	14	491
Dec. 4	NR	4	1	126	154	94	NR	524

NR- None Reported

WATER BULLETIN 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

QUALITY OF WATER - 2003

08-4557.00 RIO GRANDE NEAR JIMENEZ, COAHUILA AND QUEMADO, TEXAS

LOCATION: Near gaging station at Maverick Canal Headgates. The canal intake is at river kilometer 875, 21.5 river kilometers above the gaging station.

RECORDS: Specific conductance, 1954 through current year.

REMARKS: Sampling and determinations by the International Boundary and Water Commission, U.S. Section.

SPECIFIC CONDUCTANCE OF WATER SAMPLES IN MICROSIEMENS/CM @ 25 DEG C - 2003

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	855	897	917	1,050	932	911	840	850	798	762	779	660
2	852	895	924	974	933	908	841	844	805	757	686	680
3	855	893	920	977	934	907	856	848	804	769	778	758
4	854	896	920	968	938	908	843	849	805	775	775	776
5	853	893	921	968	930	910	847	845	803	763	770	776
6	854	893	926	963	940	908	830	846	812	780	783	782
7	853	896	922	968	947	906	835	849	808	776	736	781
8	861	894	923	964	944	908	829	849	807	767	778	784
9	857	894	922	965	936	906	852	848	808	783	760	781
10	855	895	918	962	938	905	840	845	809	766	772	877
11	860	894	923	966	935	910	837	847	806	791	778	785
12	853	897	825	968	942	910	843	843	805	774	774	784
13	859	893	922	964	945	908	840	844	810	768	775	773
14	857	901	924	987	946	909	848	845	806	770	773	780
15	858	894	917	963	937	918	852	847	812	804	774	793
16	851	898	924	962	931	907	850	846	809	800	777	786
17	850	895	926	963	957	906	843	843	811	799	775	785
18	854	897	920	962	947	909	842	845	808	797	778	786
19	853	895	922	965	927	906	830	846	806	803	777	780
20	854	900	925	966	934	905	837	843	809	804	776	880
21	841	902	918	946	937	907	831	847	806	802	739	786
22	852	897	920	962	936	905	835	846	810	800	750	785
23	855	898	926	967	929	909	841	845	807	801	708	786
24	854	900	921	964	940	910	842	847	805	798	778	784
25	856	895	924	967	944	909	851	838	806	786	781	788
26	857	895	922	961	930	913	848	849	808	803	758	784
27	855	901	927	963	942	911	851	845	811	800	777	785
28	856	900	925	962	928	915	850	850	809	800	778	784
29	853		921	967	939	909	848	844	803	800	777	787
30	855		922	964	940	908	838	844	808	798	779	785
31	857		924		937		837	845		802		780

08-4587.00 RIO GRANDE NEAR EL INDIO, TEXAS AND VILLA GUERRERO, COAHUILA

LOCATION: Gaging station at river kilometer 741, 57.8 river kilometers downstream from the international highway bridge between Eagle Pass, Texas and Piedras Negras, Coahuila.

RECORDS: Specific conductance 1954 through current year.

REMARKS: Sampling and determinations by the International Boundary and Water Commission, U.S. Section.

SPECIFIC CONDUCTANCE OF WATER SAMPLES IN MICROSIEMENS/CM @ 25 DEG C - 2003

	January	March	May	July	September	November
8	862	5	928	8	1,010	3
22	906	19	986	21	1,010	17
February		April		June	August	October
5	899	2	959	4	662	1
19	945	17	999	18	828	17
				20		505
						17
						712
						December
						3
						699
						5
						671
						692

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

QUALITY OF WATER - 2003

08-4509.00 RIO GRANDE BELOW AMISTAD DAM NEAR CD. ACUNA, COAHUILA AND DEL RIO, TEXAS

SPECIFIC CONDUCTANCE OF WATER SAMPLES IN MICROSIEMENS/CM @ 25 DEG C - 2003												
Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1												
2	863			1,010	986	976	979	901	849	849		789
3	863	845	956				913		860	850	804	790
4				1,010								
5		958	969		1,020			976		859		793
6	875					972		975		844		
7		934	977	996	992		937				799	
8	876						906		860	843		785
9				999	1,010	976	962					
10	910	963	998						864	839	781	787
11			997	1,000		981	966	967				
12		973	998		1,010				847		789	
13	927					978	988	958				
14	961	1,010	1,010	1,000				882	838	848	787	
15	946								976			886
16				1,040	1,020	977	981					
17	902								958	853		753
18		954		1,030		973	977	890				
19		968	978		952				856		786	788
20					1,040		923					
21	923	971	971	1,020	1,010		942	942	848	836	789	797
22				1,010	1,010	977	926					
23	930	979	968		984	969	903	819	855	819	780	
24				1,020								
25												
26		941	976						736		773	
27	910	960	976	1,030		989	992	898		796	781	
28							901	898				
29	913								851	805		791
30				1,020		968	890					787
31	915		987									

RIO GRANDE DOWNSTREAM OF DEL RIO, TEXAS NEAR MOODY RANCH

LOCATION: Rio Grande 2.7 kilometers downstream of Del Rio, Texas near Moody Ranch. Monitoring station is located at river kilometer 903.25 and 20.4 kilometers downstream from Amistad Reservoir.

RECORDS : Period of record: 1988 - current year.

REMARKS : Sampling by the International Boundary and Water Commission, U.S. Section. Analyses by a contract laboratory.

2003	Time	Streamflow Momentary	Specific Conductance Micro- siemens /cm	pH	Water Temper- ature Deg C	Oxygen Dissolved (DO)	Coliform Fecal Colonies/ 100/ml	Total Suspended Solids	Volatile Suspended Solids
Date	Standard	CMS	Units	Units	Deg C	mg/L	Colony/ml	mg/l	mg/L
Jan. 15	1245	23.2	947	7.6	10.3	10.5	900	5	1
Feb. 12	1310	19.9	957	7.6	16.1	10.9	679	4	<4
Mar. 04	1330	20.1	909	8.1	16.8	10.5	NR	10	2
Apr. 09	1300	18.5	963	7.6	17.4	10.7	126	4	<4
May 14	1300	95.0	1,010	8.1	19.0	10.2	56	13	7
June 17	1628	NR	945	8.4	25.4	11.8	188	7	1
July 22	1115	18.4	918	8.1	27.9	7.6	142	10	1
Aug. 13	1205	1.12	937	7.8	22.9	7.8	260	7	<4
Sept. 10	1130	0.65	880	7.8	31.0	8.2	243	2	1
Oct. 27	1605	NR	813	9.0	19.4	12.9	NR	14	1
Nov. 13	1400	34.0	840	8.1	22.4	9.3	370	3	<1

2003	Chloride	Solids Dissolved	Sulfate ion (SO4) Dissolved	Ammonia	Total Organic Carbon
Date	mg/L	Total mg/l	Dissolved mg/l	mg/l	mg/l
Jan. 15	110	625	176	<0.020	2.7
Feb. 12	103	571	248	<0.020	<2.0
Mar. 04	100	550	154	0.370	2.0
Apr. 09	146	510	342	0.300	2.7
May 14	112	575	143	0.200	8.1
June 17	111	592	155	0.120	2.0
July 22	74	526	106	0.600	10.5
Aug. 13	56	512	69	0.100	3.0
Sept. 10	117	574	162	0.100	3.3
Oct. 27	84	NR	134	0.190	2.0
Nov. 13	67	477	100	0.100	3.8

NR - None Reported

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

QUALITY OF WATER - 2003

08-4590.00 RIO GRANDE AT LAREDO, TEXAS AND NUEVO LAREDO TAMAULIPAS

LOCATION: Samples for biochemical analyses, specific conductance, and suspended silt collected at the Laredo Water Plant, river kilometer 586.

RECORDS: Chemical analyses, 1955 through 1976; chemical and biochemical analyses, 1973 through September 1986; biochemical analyses, September 1968 through current year; suspended silt, 1953 through current year; specific conductance, 1948-1949 and 1955 through current year.

REMARKS: Field parameter samples for biochemical analyses, suspended silt and specific conductance collected and analyzed by the International Boundary and Water Commission and the Texas Natural Resource Conservation Commission. Additional water quality parameters, including heavy metals, nutrients, pesticides, and biological indices, available from U. S. Geological Survey through September 1986.

SPECIFIC CONDUCTANCE OF WATER SAMPLES IN MICROSIEMENS/CM @ 25 DEG C - 2003

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	959	946	948	1,030	986	509	875	546	827	548	724	650
2	994	976	991	1,000	932	580	895	623	802	496	625	712
3	997	1,000	983	1,030	1,060	617	896	621	782	425	708	679
4	984	972	990	1,030	1,050	612	938	640	738	502	697	729
5	980	1,000	942	942	1,030	576	786	645	553	571	723	696
6	930	914	976	1,000	1,040	588	692	660	364	604	725	690
7	965	968	975	1,020	1,030	686	718	651	372	632	706	728
8	950	1,020	922	1,020	1,020	807	753	640	556	698	733	725
9	969	953	980	987	925	862	654	649	856	598	726	685
10	950	967	990	1,000	1,050	808	498	660	597	736	714	722
11	974	971	977	983	1,030	870	542	619	607	653	731	652
12	975	835	981	995	1,030	874	498	706	577	524	730	729
13	948	976	947	1,030	1,030	801	478	738	561	273	734	719
14	971	972	969	1,010	1,040	773	527	764	712	798	752	729
15	952	995	1,000	1,020	1,030	708	568	743	727	419	758	711
16	980	993	978	1,020	984	637	654	824	629	498	749	699
17	995	1,000	1,000	1,030	1,040	775	664	782	637	572	751	700
18	1,000	1,010	993	1,020	1,040	782	693	763	711	680	749	681
19	1,010	1,000	1,000	1,020	1,090	722	739	737	750	626	749	711
20	997	1,010	1,020	1,030	1,040	808	757	753	736	608	726	686
21	978	1,000	1,030	1,010	1,050	590	806	820	700	364	710	724
22	991	1,010	1,020	1,000	1,040	655	710	856	871	561	NR	734
23	994	993	1,020	1,020	1,040	740	709	830	668	563	749	727
24	1,000	1,000	1,040	1,010	1,030	832	574	812	657	617	762	722
25	989	1,020	1,060	1,020	1,040	901	541	728	657	637	751	729
26	995	1,010	1,070	1,020	1,040	896	600	763	631	668	740	716
27	998	1,010	1,040	1,010	1,020	902	597	744	642	688	750	680
28	1,000	1,000	1,040	1,020	1,020	895	608	772	570	672	735	704
29	994		1,060	1,000	1,040	874	602	812	482	685	749	734
30	1,010		1,050	1,030	849	822	609	789	525	668	747	732
31	1,020		1,040		663	613	717		872			759

SUSPENDED SILT - 2003

Month	Monthly weight Megagrams		Number of Samples	Gravimetric Percentages		Maximum Sample*	Minimum Sample*	Silt volume Thousand Cubic Meters**
	Water	Silt		Composite	Sample*			
Jan.	63,590,000	763	31	0.0012	0.0024	NR		0.7
Feb.	60,653,000	667	28	0.0011	0.0020	NR		0.6
Mar.	55,650,000	3,339	31	0.0060	0.0074	NR		3.1
April	64,636,000	13,574	30	0.0210	0.0110	NR		12.7
May	277,612,000	15,824	31	0.0057	0.0395	NR		14.8
June	123,060,000	23,874	30	0.0194	0.1088	NR		22.4
July	125,824,000	16,860	31	0.0134	0.0646	NR		15.8
Aug.	101,036,000	113,160	31	0.1120	0.0103	0.0044		106
Sept.	138,491,000	27,698	30	0.0200	0.0607	0.0058		25.9
Oct.	260,963,000	56,107	31	0.0215	0.0756	0.0077		52.5
Nov.	83,592,000	1,337	30	0.0016	0.0055	0.0032		1.25
Dec.	69,474,000	834	31	0.0012	0.0032	0.0068		0.8
Year	1,424,581,000	274,037	365				256.6	

* Represents the gravimetric percentages at the maximum flow and minimum flow of the month

** Volume calculated at 1.068 megagrams per cubic meter

NR - None Reported

QUALITY OF WATER - 2003

08-4592.00 RIO GRANDE AT PIPELINE CROSSING, LAREDO, TEXAS AND NUEVO LAREDO, TAMAULIPAS

LOCATION: Samples collected 13.9 kilometers downstream from Texas/Mexico Railroad bridge, river kilometer 563.

Latitude 27°24'01", Longitude 99°29'18".

RECORDS: Chemical analyses, 1955 through 1976; chemical and biochemical analyses, 1973 through September 1986; biochemical analyses, September 1968 through current year; suspended silt, 1953 through current year; specific conductance, 1948-1949 and 1955 through current year.

REMARKS: Field parameter samples for biochemical analyses, suspended silt and specific conductance collected and analyzed by the U. S. Geological Survey. Additional water quality parameters, including heavy metals, nutrients, pesticides, and biological indices, available from U.S. Geological Survey through September 1986.

2003	Time	Streamflow Momentary	Specific Conductance Micro-siemens /cm	pH	Water Temper- ature	Oxygen Dissolved (DO)	Residue @ 180 degrees	Hardness as CaCO ₃	Turbidity
Date	Standard	CMS	Units	Deg C	mg/L	mg/mL	mg/L	mg/L	NTU
Jan. 15	1300	25.4	993	7.9	13.0	15.0	598	250	5
Mar. 31	1300	15.6	1,170	8.1	19.5	8.9	730	310	6
May 27	1500	112	1,010	8.1	26.0	7.1	625	250	34
June 25	1100	26.1	931	8.2	29.5	6.6	577	260	13
July 24	1000	52.4	685	7.8	30.0	7.0	432	220	68
Aug. 27	1120	33.1	834	7.7	29.0	5.8	520	250	57
Sept. 10	1130	33.1	616	7.6	28.5	6.6	375	180	67
Dec. 16	1700	23.8	833	8.2	14.5	10.6	493	250	4

2003	Chloride	Sodium	Sulfate ion (SO ₄) Dissolved mg/L	Alkalinity	Calcium
Date	mg/L	mg/L	mg/L	mg/L	mg/L
Jan. 15	116	95	183	110	70
Mar. 31	145	125	220	138	86
May 27	128	100	175	122	67
June 25	106	91	158	126	75
July 24	62	54	106	138	64
Aug. 27	95	81	136	126	68
Sept. 10	61	50	94	110	55
Dec. 16	88	78	148	124	70

08-4613.00 RIO GRANDE BELOW FALCON DAM NEAR FALCON, TEXAS AND NUEVA CD. GUERRERO, TAMAULIPAS

LOCATION: Chemical and specific conductance samples from Falcon Reservoir at Falcon Dam, river kilometer 442.3, and biochemical sampling at the Chapeno gaging station 4.1 river kilometers below Falcon Dam; latitude 26°31'45", longitude 99°09'30".

RECORDS: Chemical analyses, July 1955 through current year; biochemical analyses, July 1975 through current year; suspended silt, July 1955 through 1976; specific conductance 1955 through current year.

REMARKS: Sampling and determinations for specific conductance by the U.S. Geological Survey at Falcon Dam Power Plant tailrace: biochemical analyses, collected and analyzed by the USGS. A portion of the data results and analyses were performed by the USGS and funded through the National Stream Quality and Accounting Network (NASQAN).

2003	Time	Streamflow Momentary	Specific Conductance Micro-siemens /cm	pH	Water Temper- ature	Hardness, Total (as CaCO ₃)	Hardness, Noncarbonate (as CaCO ₃)	Calcium ion (Ca), Dissolved	Magnesium ion (Mg), dissolved
Date	Standard	CMS	Units	Deg C	mg/L	mg/L	mg/L	mg/L	mg/L
Jan. 14	1420	11.0	694	8.2	15.0	200	86	57	13
Mar. 03	1400	13.0	743	8.2	16.5	210	86	62	13
May 28	0900	90.0	925	8.0	27.0	220	110	60	17
June 24	1600	50.0	894	8.3	31.0	220	120	58	18
July 23	1500	38.0	834	8.0	30.5	200	110	54	16
Dec. 16	1300	NR	614	7.8	17.0	180	72	55	11

2003	Sodium ion (Na), Dissolved	Sodium Adsorption Ratio(SAR)	Potassium ion (K) Dissolved	Alkalinity Total (as CaCO ₃)	Sulfate ion (SO ₄) Dissolved	Chloride ion (Cl), Dissolved	Solids Dissolved @180 Deg.	Solids Dissolved (Calculated)
Date	mg/L		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Jan. 14	62	2	4.5	112	110	71	417	392
Mar. 03	64	2	4.9	125	119	77	463	425
May 28	88	3	4.8	112	157	109	552	516
June 24	90	3	5.5	100	160	112	544	516
July 23	89	3	5.0	94	149	108	517	488
Dec. 16	51	2	4.8	110	87	60	347	344

NR - None Reported

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

QUALITY OF WATER - 2003

08-4613.00 RIO GRANDE BELOW FALCON DAM NEAR FALCON, TEXAS AND NUEVA CD. GUERRERO, TAMAULIPAS

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	651							843	782	729		556
2												
3	653	710	742	763	860	926	876		774	733	555	560
4								866	830			
5		708	741	786	907	931			972		559	591
6	669					940		812		724		
7		711	756	786	896		872				549	
8	676							841	770	710		558
9				775	913	945						
10	681	737	752						766	708	640	562
11				787			839					
12		735	748		919	923			779		684	548
13	681				922			812				
14			756	793	913						555	
15	689						815	779	390			
16				803	924	949						
17		727	740				827			670	552	568
18	695			794	925	921						
19			743						762		554	569
20	691				908			800		370		
21		736	741	805	939						556	
22	688							822	761	578		574
23			750	803	940	897	821					
24	694		732			890		793	792	386	555	569
25				853								
26		743	772	941		874	842	785	731		1,540	576
27	698									612		
28		737	748	858	937			785	735	515	556	583
29	701				941	890						
30				884						561		
31	690		761									

RIO GRANDE BELOW RIO ALAMO NEAR FRONTON, TEXAS

LOCATION: Monitoring station is located at river kilometer 422.27 and 42.1 kilometers upstream from Rio Grande City, Texas.

RECORDS : Period of record: 1988 - current year.

REMARKS : Sampling by the International Boundary and Water Commission, U.S. Section. Analyses by a contract laboratory.

2003	Time	Streamflow Momentary	Specific Conductance Micro- siemens /cm	pH	water Temper- ature	Oxygen Dissolved (DO)	Coliform Fecal Colonies/ 100/ml	Total Suspended Solids	Volatile Suspended Solids
Date	Standard	CMS	Micro- siemens /cm	Units	Deg C	mg/L		mg/l	mg/L
Jan. 16	1040	14.0	668	7.9	14.3	8.5	NR	3	NR
Feb. 12	0840	14.5	765	8.4	16.9	8.3	16	<4	<1
Mar. 11	0820	20.0	849	7.8	18.2	7.3	30	22	21
Apr. 22	1213	196	824	8.0	23.2	8.0	NR	28	4
May 13	NR	214	915	8.0	27.2	5.8	205	NR	NR
June 17	0920	30.0	938	7.7	29.4	5.9	96	6	1
July 22	1400	NR	862	8.4	30.0	13.4	NR	3	1
Aug. 19	0945	15.0	846	7.5	26.9	7.2	40	<4	<4
Sept. 10	0945	18.0	832	7.2	26.2	7.4	70	2	1
Oct. 21	1050	4.11	789	8.3	25.4	NR	NR	8	1
Nov. 18	0930	6.00	863	8.3	23.7	4.1	40	500	NR
Dec. 16	0935	19.0	832	7.2	17.5	6.5	230	6	2

2003	Chloride	Solids Dissolved Total mg/l	Sulfate ion (SO4) Dissolved mg/l	Ammonia	Total Organic Carbon mg/l
Date	mg/L	mg/l	mg/l	mg/l	mg/l
Jan. 16	69	420	108	<0.050	4.0
Feb. 12	96	450	224	<0.020	4.0
Mar. 11	101	397	232	<0.020	3.7
Apr. 22	88	488	135	0.100	4.0
May 13	NR	NR	NR	NR	NR
June 17	130	517	142	0.200	2.5
July 22	106	518	154	NR	NR
Aug. 19	58	512	74	0.400	3.7
Sept. 10	122	479	173	0.300	3.4
Oct. 21	101	450	110	<0.050	4.0
Nov. 18	5	500	10	1.000	10.0
Dec. 16	170	410	86	0.150	2.3

NR - None Reported

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

QUALITY OF WATER - 2003

08-4645.00 RANCHERIAS DRAIN NEAR CAMARGO, TAMAULIPAS

LOCATION: At a point about 600 meters from the confluence with the Rio Grande, which is located at river kilometer 389. This drain carries waste water from the Lower Rio San Juan Irrigation District in Mexico.

RECORDS: Specific conductance, 1948 and 1960 through 2002.

REMARKS: Sampling and determinations by the International Boundary and Water Commission, U.S. Section.

SPECIFIC CONDUCTANCE OF WATER SAMPLES IN MICROSIEMENS/CM @ 25 DEG C - 2003									
January	February	March	April	May	June	July	August	September	November

No samples collected for 2003

08-4647.00 RIO GRANDE AT RIO GRANDE CITY, TEXAS NEAR CAMARGO, TAMAULIPAS

LOCATION: Gaging station at river kilometer 378, 6.0 river kilometers downstream from Rio San Juan.

RECORDS: Chemical analyses, 1959 through current year; specific conductance, 1958 through current year; suspended silt, 1959 through 1977.

REMARKS: Sampling by the International Boundary and Water Commission, U.S. Section; chemical analyses by a contract laboratory; specific conductance determinations by the International Boundary and Water Commission, U.S. Section.

2003	Time	Streamflow Momentary	Specific Conductance Micro- siemens /cm	pH	Water Temper- ature	Solids Total	Solids Volatile	Calcium ion (Ca) Dissolved	Magnesium ion (Mg), Dissolved
Date	Standard	CMS	Units	Deg C	mg/L	mg/L	mg/L	mg/L	mg/L
Jan. 14	0800	18.0	865	8.0	10.5	4	<4	74	17
Feb. 12	0740	14.5	1,050	9.0	18.7	<4	<4	65	15
Mar. 11	0710	20.0	968	8.0	19.5	NR	NR	63	15
Apr. 9	0830	63.0	861	7.0	11.9	14	5	69	16
July 22	0845	30.0	918	8.0	29.2	17	<4	55	17
Aug. 19	0805	15.0	834	9.0	29.9	4	<4	47	15

2003	Sodium ion (Na), Dissolved	Oxygen Dissolved	Potassium ion (K) Dissolved	Alkalinity Total (as CaCO ₃)	Sulfate ion (SO ₄) Dissolved	Chloride ion (Cl), Dissolved	Silica (SiO ₂) Dissolved	Solids Dissolved (Calculated)
Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Jan. 14	94	7.7	8.9	118	119	89	9.0	482
Feb. 12	88	9.0	6.6	131	230	105	6.6	520
Mar. 11	96	6.8	7.0	158	179	82	6.8	466
Apr. 9	83	6.9	6.8	133	236	102	9.3	462
July 22	103	5.5	6.5	107	112	84	13.1	525
Aug. 19	119	8.8	5.9	106	78	74	14.8	556

NR - None Reported

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

QUALITY OF WATER - 2003

08-4647.00 RIO GRANDE AT RIO GRANDE CITY, TEXAS NEAR CAMARGO, TAMAULIPAS

SPECIFIC CONDUCTANCE OF WATER SAMPLES IN MICROSIEMENS/CM @ 25 DEG C - 2003

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	761											863
2				822	852	983	927	865	802	1,130		
3	770	878	858						727	1,080	1,120	980
4				812	870	986	829	844				
5		870	890						769		1,130	891
6	768					961		851		953		
7		877	892	817	883		939					
8	744							841	821	999	1,130	826
9				780	911	971	969					
10	750	953	936						699	484	1,120	891
11				815		943	962	845				
12		933	916			959		973	891		1,100	759
13	744									825		
14		905	856	807	915			909	771	637	1,130	
15	823											846
16				824	921	972		984				
17	850	888	899		811		974	895	916	809	994	1,130
18						975			805			866
19		896	874		953			998				759
20			842							987		
21		893	842	812	926	998	906			1,150		1,200
22	868							896	823	976		989
23				840	963	969	903					
24	801	883	885			946		874	834	616	1,090	1,200
25				812								933
26		868	777		951			879				847
27	850					907		821				
28			867	829	947		877					
29	871							822	734	1,140		958
30				840	970	934	859					806
31	864		841							1,120		857

PUERECITOS DRAIN AND LOS INDIOS DRAIN NEAR CD. DIAZ ORDAZ, TAMAULIPAS

LOCATION: Puertecitos Drain, is located at a point about 2,600 meters from the confluence with the Rio Grande, which is located at river kilometer 353; and, Los Indios Drain, at a point about 650 meters from its confluence with Puertecitos Drain. These two drains join at a point about 1,300 meters from the confluence with the Rio Grande. These drains carry waste water from the lower Rio San Juan Irrigation District in Mexico.

RECORDS: Specific conductance, 1960 through 2002. Remarks: Specific conductance measurements by the International Boundary and Water Commission, U.S. Section.

SPECTETC CONDUCTANCE OF WATER SAMPLES IN MICROSTEMENS/CM @ 25 DEG C - 2003

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

QUALITY OF WATER - 2003

08-4663.00 RIO GRANDE AT LOS EBANOS, TEXAS NEAR CD. DIAZ ORDAZ, TAMAULIPAS

LOCATION: Gaging station at river kilometer 329, 54.7 river kilometers upstream from Anzalduas Dam.

RECORDS: Chemical analyses, June 1977 through current year; specific conductance, 1956 through current year.

REMARKS: Sampling by the International Boundary and Water Commission, U.S. Section; chemical analyses by a contract laboratory; specific conductance determinations by the International Boundary and Water Commission, U.S. Section.

2003		Time	Streamflow Momentary	Specific Conductance Micro- siemens /cm	pH	Water Temper- ature	Suspended Solids Total	Suspended Solids Volatile	Calcium ion (Ca), Dissolved	Magnesium ion (Mg), Dissolved
Date	Standard		CMS	Units	Deg C	mg/L	mg/L	mg/L	mg/L	mg/L
Jan. 22	1420		1.32	1,040	6.9	16.7	16	<4	72	20
Mar. 26	1210		15.0	1,020	7.6	22.9	5	4	65	19
May 21	0948		123	929	7.8	30.0	46	31	14	3
July 29	1200		83.3	963	7.9	29.5	19	10	60	20
Aug. 26	1340		11.9	1,020	8.3	31.0	20	6	50	18
Sept. 16	1305		14.3	1,160	7.9	29.1	5	2	74	24
Nov. 18	1500		39.1	1,230	7.5	25.2	6	<1	80	16
Dec. 10	1120		32.2	1,210	7.8	17.9	33	3	75	NR

2003		Sodium ion (Na), Dissolved	Oxygen Dissolved	Potassium ion (K) Dissolved	Alkalinity Total (as CaCO ₃)	Sulfate ion (SO ₄) Dissolved	Chloride ion (Cl), Dissolved	Silica (SiO ₂) Dissolved	Solids Dissolved (Calculated)
Date		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Jan. 22		140	9.4	7.9	124	167	125	2.9	597
Mar. 26		117	10.3	6.8	116	329	151	4.0	4,960
May 21		20	5.4	4.2	120	117	86	11.2	573
July 29		115	6.8	6.8	107	190	148	11.3	602
Aug. 26		109	7.0	6.3	103	183	125	13.9	597
Sept. 16		165	7.9	9.0	117	199	136	NR	695
Nov. 18		65	6.6	6.0	132	170	166	6.8	674
Dec. 10		120	7.9	7.0	168	155	250	18.1	1,400

08-4663.00 RIO GRANDE AT LOS EBANOS, TEXAS NEAR CD. DIAZ ORDAZ, TAMAULIPAS

SPECIFIC CONDUCTANCE OF WATER SAMPLES IN MICROSIEemens/cm @ 25 DEG C - 2003

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,010	960	900	840	1,060	980	970	1,020	1,280	1,190	1,500	940
2	1,040	950	910	850	1,060	980	980	1,000	1,270	1,200	1,500	940
3	1,010	950	910	860	1,050	970	980	1,020	1,280	1,200	1,500	930
4	1,060	970	910	830	1,060	980	980	1,020	1,270	1,200	1,510	930
5	1,050	950	890	840	1,050	971	980	1,000	1,280	1,200	1,510	940
6	1,050	970	910	850	1,060	960	970	1,010	1,280	1,200	1,490	930
7	1,060	970	900	840	1,060	980	970	1,030	1,280	1,200	1,480	930
8	1,050	970	900	810	1,060	980	980	980	1,280	1,190	1,500	930
9	1,050	970	910	830	1,060	970	970	1,020	1,280	1,200	1,510	930
10	1,020	950	900	850	1,050	940	970	1,020	1,280	1,200	1,500	940
11	1,050	960	910	860	1,050	980	980	1,020	1,270	1,150	1,500	930
12	1,060	970	910	850	1,050	950	980	1,020	1,280	1,160	1,500	930
13	1,050	960	910	850	1,060	950	970	1,020	1,280	1,200	1,500	940
14	1,050	930	900	850	1,020	940	980	1,000	1,280	1,190	1,500	940
15	1,040	970	910	840	1,050	970	970	1,020	1,280	1,200	1,500	930
16	1,050	960	900	630	1,060	980	980	1,020	1,280	1,200	1,500	940
17	1,060	970	900	840	1,060	980	981	1,010	1,290	1,200	1,510	930
18	1,030	970	910	850	1,040	1,000	960	1,000	1,290	1,200	1,400	940
19	1,030	940	910	850	1,060	970	990	1,020	1,280	1,200	1,510	930
20	1,050	960	910	850	1,060	1,010	960	1,020	1,280	1,200	1,500	940
21	1,060	950	910	852	1,060	970	980	1,020	1,290	1,200	1,500	930
22	1,030	960	910	850	1,060	980	980	1,010	1,280	1,200	1,500	930
23	1,060	970	910	850	1,040	960	980	970	1,280	1,200	1,500	940
24	1,030	970	910	820	1,060	980	980	1,020	1,280	1,200	1,500	930
25	1,030	960	910	850	1,060	980	980	1,020	1,280	1,190	1,500	930
26	1,050	960	900	840	1,060	970	970	1,020	1,280	1,200	1,510	930
27	1,060	970	900	830	1,050	970	980	1,030	1,280	1,170	1,500	930
28	1,070	970	900	840	1,060	980	970	1,020	1,280	1,200	1,510	940
29	1,060	900	850	1,040	980	950	1,010	1,300	1,200	1,470	930	
30	1,030	910	840	1,060	970	970	1,020	1,280	1,200	1,500	930	
31	1,030	910	850	1,050	980	980	1,020	1,280	1,170	1,500	930	

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

QUALITY OF WATER - 2003

08-4675.00 RIO GRANDE AT PENITAS, TEXAS AND REYNOSA, TAMUALIPAS

LOCATION: At the H.C.W.C. & I. District No. 1 (Edinburg) pumping plant, river kilometer 300, 26.2 river kilometers upstream from Anzalduas Dam.
RECORDS: Specific conductance 1963 through current year.

RECORDS : Specific conductance, 1963 through current year.
REMARKS : Sampling and determinations by the International B

REMARKS : Sampling and determinations by the International Boundary and Water Commission, U.S. Section.

SPECIFIC CONDUCTANCE OF WATER SAMPLES IN MICROSIEMENS/CM @ 25 DEG C - 2003

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

QUALITY OF WATER - 2003

08-4678.00 MORILLO DRAIN NEAR ANZALDUAS DAM

LOCATION: At the Morillo Drain Project pumping plant located about 0.6 river kilometer from the confluence with the Rio Grande or at the gaging station on the bypass canal 0.6 kilometer from the pumping plant. Morillo Drain enters the Rio Grande at river kilometer 288, 14.2 river kilometers upstream from Anzalduas Dam. This drain carries waste water from the lower Rio San Juan Irrigation District in Mexico and surface runoff during periods of heavy precipitation.

RECORDS: Chemical analyses, 1962 through current year; specific conductance, 1956 through current year.
REMARKS: Sampling by the International Boundary and Water Commission, U.S. Section and chemical analyses by a contract laboratory. Determinations for specific conductance by International Boundary and Water Commission, U.S. Section.

2003	Time	Streamflow Momentary	Specific Conductance Micro- siemens /cm	pH	Water Temper- ature Deg C	Hardness, Total (as CaCO ₃) mg/L	Hardness, Noncarbonate (as CaCO ₃) mg/L	Calcium ion (Ca), Dissolved mg/L	Magnesium ion (Mg), Dissolved mg/L
Date	Standard	CMS	Units						
Jan. 22	1205	2.50	4,120	6.8	19.4	NR	NR	200	67
Feb. 20	1305	1.00	6,530	7.3	21.7	NR	NR	310	110
Mar. 26	1030	1.00	7,250	7.2	22.8	NR	NR	296	112
Apr. 30	1330	1.00	4,090	7.7	27.3	NR	NR	249	63
May 21	1015	3.26	4,210	7.8	29.0	NR	NR	13	3
June 30	1055	1.00	5,150	7.9	35.0	NR	NR	181	61
July 29	1015	1.00	672	7.9	29.4	NR	NR	260	97
Aug. 26	1130	1.00	6,560	8.0	31.5	NR	NR	219	83
Sept. 16	1145	1.00	3,810	7.7	27.1	NR	NR	151	50
Nov. 19	1115	NR	800	7.8	19.3	NR	NR	320	105
Dec. 10	1230	1.00	7,730	8.0	16.6	NR	NR	285	95

2003	Sodium ion (Na), Dissolved	Oxygen Dissolved	Potassium ion (K) Dissolved	Alkalinity Total (as CaCO ₃) mg/L	Sulfate ion (SO ₄) Dissolved	chloride ion (Cl), Dissolved	Silica (SiO ₂) Dissolved	Solids Dissolved (calculated)
Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Jan. 22	990	7.4	21.0	209	997	660	20.1	2,760
Feb. 20	1,600	7.9	21.0	270	827	435	34.8	4,470
Mar. 26	1,850	11.0	19.0	270	1,870	999	32.4	4,960
Apr. 30	NR	7.4	62.6	354	661	700	21.8	2,980
May 21	17	5.6	3.9	NR	810	625	30.9	NR
June 30	874	6.2	14.2	253	1,130	885	37.4	3,230
July 29	1,700	8.9	20.4	175	688	1,380	38.0	4,470
Aug. 28	1,310	8.5	16.2	242	1,140	946	40.8	434
Sept. 16	700	5.6	14.5	162	475	515	13.3	2,120
Nov. 19	1,420	6.9	15.0	310	2,080	1,430	23.1	5,080
Dec. 10	120	9.9	13.0	305	1,930	2,000	38.6	5,050

NR - None Reported

SPECIFIC CONDUCTANCE OF WATER SAMPLES IN MICROSIEMENS/CM @ 25 DEG C - 2003												
Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1												
2	7,420											
3	6,810	4,450	6,670	7,250	4,170	4,000	4,810	6,580	6,550	6,690	7,510	
4		4,820	6,740	7,090		4,180	4,630			5,220	6,980	7,450
5			6,730			4,030	3,180	6,640	5,760	5,170	7,050	7,580
6	7,120	4,780	6,620			3,940	5,390	6,240		7,050	7,560	
7	6,800	4,270	6,650	7,070	3,820		2,460	6,760			7,530	
8	4,210		6,600	6,830			2,810	6,700	3,740	6,990		7,660
9	7,560		1,560	3,940		5,030	4,500		4,060			7,690
10	6,150	5,140	6,900	3,150		4,970	5,150			7,310		7,510
11		5,010	7,000	3,960		5,120		6,760	5,380		7,570	7,470
12		5,550	6,900	6,970		3,870		6,690	5,660		7,500	7,530
13	4,100		6,970		3,960	4,940	6,160	5,860		530		
14	3,540	5,940	6,990	6,350			6,220	3,820		420		
15	3,630		6,300	3,920		6,030	4,610	4,800				7,010
16	3,650		6,400	3,990	4,290	6,280						6,000
17	3,530	5,900	6,820			3,670	6,400		5,870		7,670	5,930
18		6,120	5,620			3,030			6,620		7,700	5,950
19		6,450	6,200	3,960	4,290		4,580	500			7,800	5,970
20	3,530	6,420	6,870	3,870	5,110				4,630			
21	4,190			5,670	3,970		6,520	5,580		6,130	8,030	
22	3,860			5,630	3,990		6,450	5,820	3,400			5,960
23	3,970			5,590			6,710		2,950	6,680		6,200
24		6,680	7,020	5,430		5,840	6,630				7,910	6,580
25			7,040	5,340		6,070	6,660	6,350			7,910	
26		6,670	7,180		4,280	5,890			4,930		7,900	7,230
27	3,950	6,710	7,090					6,540		4,390	7,600	
28	3,720	6,700	7,280	4,680	4,050		6,720	6,490		6,360	7,810	
29				4,300	3,160		6,700	6,630	6,180			
30	4,060			4,160	4,130	5,050		6,550		7,270		7,450
31	4,390								6,610			7,450

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

QUALITY OF WATER - 2003

08-4692.00 RIO GRANDE BELOW ANZALDUAS DAM NEAR REYNOSA, TAMAULIPAS AND MISSION, TEXAS

LOCATION: At Anzalduas Dam, 0.8 river kilometer above the gaging station, located at river kilometer 273.

RECORDS: Chemical analyses, March 1959 through current year; specific conductance 1948 and 1956 through current year; suspended silt, May 1956 through 1977.

REMARKS: Sampling by the International Boundary and Water Commission, U.S. Section; chemical analyses by a contract laboratory; determinations for specific conductance by the International Boundary and Water Commission, U.S. Section.

2003	Time	Streamflow Momentary	Specific Conductance Micro- siemens /cm	pH	Water Temper- ature	Total Suspended Solids	Oxygen, Dissolved	Calcium ion (Ca), Dissolved	Magnesium ion (Mg), Dissolved
Date	Standard	CMS	Units	Deg C	mg/L	mg/L	mg/L	mg/L	mg/L
Jan. 22	1230	24.0	1,270	6.8	16.6	7	10.2	80	23
Mar. 26	1045	17.1	1,360	7.7	23.3	5	12.0	83	24
May 21	1045	92.3	1,070	7.9	30.2	14	6.7	16	3
July 29	1030	40.4	1,160	8.2	30.5	8	8.9	63	22
Aug. 26	1155	22.3	1,340	8.5	32.3	10	10.2	65	24
Sept. 16	1215	13.6	1,120	8.0	29.7	6	7.3	68	20
Nov. 19	1150	36.2	1,770	7.7	24.0	2	8.1	100	30
Dec. 10	1310	20.5	1,830	8.1	18.8	6	9.0	97	27

2003	Sodium ion (Na), Dissolved	Volatile Suspended Solids	Potassium ion (K) Dissolved	Alkalinity Total (as CaCO ₃)	Sulfate ion (SO ₄) Dissolved	Chloride ion (Cl), Dissolved	Silica (SiO ₂) Dissolved	Solids Dissolved (Calculated)
Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Jan. 22	200	1	8.6	140	164	140	5.1	991
Mar. 26	179	<4	8.3	133	212	98	8.8	921
May 21	22	8	5.0	132	149	112	11.9	658
July 29	151	5	7.5	123	244	160	13.9	714
Aug. 26	172	1	8.2	112	234	174	14.9	831
Sept. 16	163	2	8.7	113	194	138	8.1	684
Nov. 19	260	<1	10.0	126	254	268	6.0	1,030
Dec. 18	220	2	8.0	168	230	280	17.9	1,110

NR - None Reported

SPECIFIC CONDUCTANCE OF WATER SAMPLES IN MICROSIEMENS/CM @ 25 DEG C - 2003

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1		1,420	1,340	1,490	870	1,150	1,120	1,120	1,150	1,060	1,680	2,000
2		1,320	1,140	1,260	890	1,150	1,140	1,120	1,180	970	1,610	1,900
3	1,140	1,340	1,110	1,150	870	1,140	1,180	1,080	1,130	990	1,580	1,920
4	1,060	1,370	1,110	1,070	790	1,150	1,110	1,060	1,180	1,080	1,540	1,710
5	1,060	1,520	1,130	1,000	900	1,210	1,200	1,070	1,110	1,120	1,600	1,810
6	1,040	1,460	1,160	940	890	1,200	1,000	1,070	1,140	1,100	1,480	1,990
7	1,020	1,300	980	920	920	1,240	1,170	1,080	1,100	1,130	1,610	1,980
8	1,020	1,270	1,030	920	840	1,240	1,140	1,050	1,130	1,280	1,600	1,860
9	1,200	1,220	1,110	900	890	1,250	1,210	1,050	1,120	1,470	1,620	1,760
10	1,100	1,590	1,190	880	920	1,230	1,450	1,000	1,090	1,580	1,640	1,840
11	1,020	1,450	1,270	850	950	1,320	1,360	970	1,120	1,720	1,580	1,870
12	1,860	1,390	1,340	860	950	1,300	1,250	1,030	1,240	1,770	1,570	1,680
13	1,900	1,390	900	920	1,250	1,180	1,090	990	780	1,560	1,730	
14	1,920	1,420	1,400	930	970	1,280	1,150	1,050	1,030	650	1,780	1,720
15	1,020	1,520	1,400	900	1,000	1,230	1,150	1,110	1,070	450	1,770	1,660
16	970	1,610	1,330	890	990	1,240	1,210	1,030	1,120	560	1,830	1,740
17	1,050	1,650	1,330	860	1,020	1,220	1,310	1,040	1,150	760	1,630	1,940
18	1,030	1,480	1,310	840	1,000	1,350	1,510	1,050	1,090	1,060	1,630	2,060
19	1,110	1,500	1,240	870	1,020	1,390	1,660	1,090	1,070	1,200	1,680	1,810
20	1,080	1,550	1,260	840	1,030	1,220	1,590	1,260	1,070	1,270	1,760	1,560
21	1,030	1,540	1,310	820	1,060	1,150	1,720	1,260	1,870	1,320	1,520	1,450
22	1,070	1,410	1,320	840	1,080	1,260	1,560	1,210	1,180	1,350	1,660	1,580
23	1,250	1,350	1,270	850	1,070	1,300	1,470	1,170	1,200	1,350	1,570	1,720
24	1,300	1,490	1,190	830	1,040	1,430	1,370	1,230	1,060	1,400	1,700	1,810
25	1,430	1,590	1,290	830	1,090	1,380	1,220	1,150	930	1,400	1,850	1,710
26	1,360	1,630	1,320	880	1,080	1,470	1,160	1,270	920	1,430	1,800	1,580
27	1,390	1,450	1,400	840	1,090	1,300	1,240	1,430	960	1,470	1,750	1,500
28	1,350	1,300	1,380	840	1,090	1,270	1,170	1,320	900	1,530	1,700	1,580
29	1,270		1,320	840	1,000	1,190	1,160	1,300	880	1,520	1,730	1,570
30	1,340	1,410	1,410	870	1,130	1,130	1,160	1,280	920	1,610	1,990	1,560
31	1,350		1,560				1,170	1,180	1,520		1,670	

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

QUALITY OF WATER - 2003

RIO GRANDE AT INTERNATIONAL BRIDGE AT US 281 AT HIDALGO, TEXAS

2003	Time	Streamflow Momentary	Specific Conductance Micro- siemens /cm	pH	Water Temper- ature Deg C	Oxygen Dissolved (DO) mg/L	Coliform Fecal Colonies/ 100/ml	Total Suspended Solids mg/l	Volatile Suspended Solids mg/L
Date	Standard	CMS	Units	Deg C					
Jan. 13	1055	NR	909	8.0	19.9	9.9	NR	18	NR
Feb. 19	1240	19.5	1,530	7.9	19.4	8.8	238	10	4
Mar. 26	1340	17.1	1,370	8.1	23.8	9.9	40	8	<4
Apr. 22	1345	NR	915	8.1	23.4	8.1	NR	58	6
May 21	1125	92.3	1,060	7.8	30.0	4.1	42	28	20
June 30	1150	52.6	1,150	8.0	30.9	7.1	94	38	<4
July 30	1100	NR	1,190	8.1	29.4	11.7	NR	23	3
Aug. 27	0850	23.5	1,390	8.0	30.0	6.3	13	7	<4
Oct. 21	1340	93.2	1,400	8.0	26.6	NR	NR	74	5
Nov. 19	1240	NR	1,690	7.7	23.4	8.0	NR	4	<1
Dec. 10	1425	17.8	1,870	8.0	18.2	9.1	38	NR	NR

NR- None Reported

2003	Chloride mg/L	Solids Dissolved Total mg/l	Sulfate ion (SO ₄) Dissolved mg/l	Ammonia mg/l	Total Organic Carbon mg/l
Date					
Jan. 13	113	552	170	0.080	4.0
Feb. 19	119	639	279	<0.020	4.5
Mar. 26	82	844	186	0.100	4.3
Apr. 22	88	488	135	0.080	4.0
May 21	111	659	153	<0.020	<2.0
June 30	120	653	165	0.600	2.8
July 30	160	744	232	NR	NR
Aug. 27	190	864	264	0.300	2.9
Oct. 21	179	836	267	0.120	6.0
Nov. 19	277	958	276	0.130	3.0
Dec. 10	300	1090	230	0.230	4.2

NR - None Reported

08-4733.90 RIO GRANDE AT MERCEDES IRRIGATION DISTRICT PUMPS NEAR MERCEDES, TEXAS AND RIO RICO, TAMAULIPAS

LOCATION: At river kilometer 190, 84.6 river kilometers downstream from Anzalduas Dam.

RECORDS: Specific conductance, 1945 through current year.

REMARKS: Sampling and determinations by the International Boundary and Water Commission, U.S. Section.

SPECIFIC CONDUCTANCE OF WATER SAMPLES IN MICROSIEMENS/CM @ 25 DEG C - 2003

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,160	1,380	1,590	1,510	920	1,160	1,240	1,230	1,440	1,220	1,700	1,940
2	1,190	1,360	1,660	1,490	900	1,190	1,160	1,200	1,310	1,240	1,600	1,860
3	1,290	1,410	1,640	1,610	930	1,190	1,220	1,180	1,090	1,410	1,700	1,950
4	1,320	1,470	1,430	1,570	950	1,290	1,210	1,140	1,330	1,260	1,660	2,150
5	1,230	1,530	1,380	1,350	950	1,320	1,220	1,130	1,180	1,390	1,670	2,120
6	1,280	1,500	1,260	1,270	930	1,300	1,210	1,100	1,280	1,380	1,650	2,100
7	1,350	1,470	1,290	1,180	930	1,300	1,180	1,110	1,400	1,360	1,710	1,950
8	1,340	1,470	1,330	1,100	940	1,280	1,070	1,120	1,220	1,340	1,680	1,930
9	1,190	1,490	1,330	1,030	960	1,310	1,150	1,090	1,210	1,390	1,670	2,050
10	1,150	1,610	1,350	980	990	1,340	1,240	1,100	1,190	1,440	1,670	2,120
11	1,180	1,560	1,360	1,040	970	1,330	1,280	1,080	1,240	1,440	1,690	2,110
12	1,260	1,470	1,310	1,020	970	1,320	1,300	1,070	1,260	1,580	1,640	1,990
13	1,370	1,460	1,300	1,050	960	1,360	1,410	1,040	1,230	1,820	1,700	1,950
14	1,260	1,530	1,330	1,040	990	1,360	1,490	1,070	1,150	1,250	1,710	2,000
15	1,130	1,640	1,380	1,040	940	1,310	1,360	1,070	1,110	890	1,710	1,910
16	1,060	1,670	1,230	1,020	990	1,310	1,340	1,090	980	530	1,820	1,760
17	1,080	1,500	1,500	1,030	990	1,230	1,310	1,120	1,160	500	1,910	1,870
18	1,130	1,630	1,540	1,010	1,040	1,400	1,330	1,080	1,190	590	1,940	1,890
19	1,210	1,630	1,520	950	1,030	1,380	1,290	1,110	1,200	900	1,820	1,890
20	1,210	1,650	1,520	970	1,010	1,390	1,310	1,130	1,160	1,150	1,720	1,920
21	1,220	1,740	1,520	930	1,060	1,460	1,550	1,210	1,070	1,260	1,750	2,100
22	1,260	1,760	1,490	930	1,070	1,470	1,670	1,260	1,220	1,310	1,880	2,160
23	1,250	1,670	1,510	910	1,110	1,430	1,640	1,350	1,220	1,420	1,860	1,860
24	1,320	1,630	1,510	920	1,070	1,390	1,760	1,370	1,160	1,430	1,710	1,710
25	1,210	1,700	1,540	910	1,070	1,390	1,660	1,290	1,210	1,410	1,790	1,690
26	1,170	1,530	1,500	970	1,110	1,520	1,560	1,270	1,140	1,440	1,690	1,870
27	1,290	1,510	1,460	970	1,070	1,430	1,500	1,310	1,070	1,450	1,700	1,910
28	1,410	1,610	1,530	900	1,120	1,500	1,320	1,340	1,110	1,450	1,750	1,870
29	1,490	1,480	920	1,090	1,360	1,240	1,360	1,140	1,140	1,530	2,050	1,850
30	1,460	1,500	910	1,080	1,310	1,210	1,440	1,190	1,570	2,030	1,670	
31	1,420	1,560	1,210				1,250	1,490	1,560		1,660	

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

QUALITY OF WATER - 2003

08-4750.00 RIO GRANDE NEAR BROWNSVILLE, TEXAS AND MATAMOROS, TAMAULIPAS

LOCATION: Gaging station at river kilometer 78.3, 0.3 river kilometer downstream from El Jardin pumping plant and 11.2 river kilometers downstream from the international highway bridge between Brownsville, Texas and Matamoros, Tamaulipas.

RECORDS: Chemical and biochemical analyses, October 1967 through January 1968 and October 1974 through current year; biochemical, December 1976 through current year; specific conductance, 1955 through September 1983; suspended silt, 1955 through 1977.

REMARKS: Sampling by the International Boundary and Water Commission, U.S. Section and Texas Commission on Environmental Quality. Sampling and determinations for specific conductance prior to 1978 by the International Boundary and Water Commission, U.S. Section. Analyses by a contract laboratory.

2003 Date	Time Standard	Streamflow Momentary CMS	Specific Conductance Micro- siemens /cm	pH Units	Water Temper- ature Deg C	Oxygen Dissolved (DO) mg/L	Coliform Fecal Colonies/ 100/ml	Total Suspended Solids mg/l	Volatile Suspended Solids mg/L
Jan. 16	1610	6.00	1,400	7.9	16.8	9.4	NR	12	NR
Feb. 20	0910	3.65	1,610	7.8	25.5	7.6	935	21	21
Mar. 27	1020	4.28	1,440	7.2	22.7	7.2	NR	15	8
Apr. 24	1200	1.78	1,190	7.8	26.2	6.4	106	10	3
May 21	1350	4.53	1,020	7.5	45.0	4.9	885	6	<4
June 30	1430	5.49	1,450	7.4	31.3	4.5	600	10	<4
July 21	1300	2.00	1,410	8.4	31.1	8.6	NR	9	2
Aug. 27	1200	5.98	1,210	7.5	31.6	4.8	380	17	<4
Oct. 30	1025	NR	1,440	9.0	22.6	7.0	NR	174	16
Nov. 18	1235	49.2	1,770	7.5	25.7	6.6	390	4	<1
Dec. 11	0945	8.61	2,230	7.8	18.2	7.6	NR	3	2

2003 Date	Chloride mg/L	Solids Dissolved Total mg/l	Sulfate ion (SO ₄) Dissolved mg/l	Alkalinity mg/l	Total Organic Carbon mg/l
Jan. 16	206	824	239	179	6.0
Feb. 20	100	995	231	173	6.4
Mar. 27	105	865	211	156	4.4
Apr. 24	152	676	195	150	5.0
May 21	94	608	126	148	<4.0
June 30	175	830	205	138	<2.0
July 21	204	836	253	128	4.0
Aug. 27	151	727	180	154	3.6
Oct. 30	207	880	287	139	4.0
Nov. 18	248	1,020	290	137	3.2
Dec. 11	450	1,160	340	189	5.2

NR - None Reported

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

RAINFALL ON THE RIO GRANDE WATERSHED

IN THE UNITED STATES

IN MILLIMETERS

Tabulated below, in approximate downstream order, are monthly records of United States rainfall stations with averages for their periods of record. With the exception of Las Cruces, New Mexico, all stations are located in Texas. For location, elevation, period of record, type of gage in use, watershed subdivision in which the station is located, and the observer, see alphabetical listing of these stations following rainfall data in this bulletin. These rainfall records have not been published elsewhere. Records of daily rainfall amounts, where available, are on file in the office of the United States Section of the Commission. Daily records for years prior to 1953 may also be found in corresponding water bulletins.

Detailed listings of the months and years for which records are available through 1970 may be found under "Index to Precipitation Records" in Water Bulletins 10, 14, 26, and Supplement 40A.

	Las Cruces, New Mexico		American Dam		Fort Hancock Bridge		Guayuco Arroyo		Bill Shannon Ranch	
Month	2003	Average	2003	Average	2003	Average	2003	Average	2003	Average
Jan.	0	14	0	10	0	9	0	7	0	9
Feb.	41	12	34	9	36	8	25	6	19	9
Mar.	3	5	3	8	3	6	0	5	3	6
April	0	4	3	5	0	6	0	4	0	6
May	0	11	0	8	0	11	0	11	0	17
June	23	19	6	15	11	21	0	14	33	41
July	24	28	25	35	19	33	35	35	49	51
Aug.	16	56	44	39	15	38	10	40	11	58
Sept.	11	30	T	29	28	32	33	29	24	53
Oct.	16	24	2	19	14	24	15	21	66	30
Nov.	0	13	9	9	0	10	0	6	0	9
Dec.	0	20	0	13	0	12	0	10	0	10
Yearly	134	236	126	199	126	210	118	188	205	299

	Adobes Ranch		H. T. Fletcher Ranch		Kerr Mitchell Ranch		Shafter		Presidio (IB&WC Gage)	
Month	2003	Average	2003	Average	2003	Average	2003	Average	2003	Average
Jan.	0	8	0	16	0	12	0	7	7	8
Feb.	12	6	28	10	20	10	27	12	35	8
Mar.	0	4	8	7	0	5	0	7	38	5
April	0	5	0	13	0	14	0	16	0	7
May	0	14	17	27	16	31	0	25	1	14
June	7	31	98	50	42	49	46	54	23	32
July	7	46	74	75	77	54	49	63	29	40
Aug.	46	44	87	79	56	55	44	55	68	35
Sept.	0	48	24	58	48	50	30	61	16	35
Oct.	33	17	78	35	61	33	101	33	27	20
Nov.	0	6	0	11	0	9	0	9	0	8
Dec.	0	7	0	13	0	11	0	9	0	9
Yearly	105	236	414	394	320	333	297	351	244	221

	Redford		Study Butte		Terlingua Creek Station		Johnson Ranch		Owens Ranch	
Month	2003	Average	2003	Average	2003	Average	2003	Average	2003	Average
Jan.	0	7	14	9	13	8	18	8	0	14
Feb.	21	5	15	8	13	5	13	5	71	20
Mar.	0	4	0	5	0	3	0	3	25	22
April	0	7	0	10	0	8	0	9	6	42
May	0	15	12	24	0	17	0	21	57	53
June	48	26	42	30	0	26	98	29	34	47
July	33	39	111	45	62	35	27	30	36	32
Aug.	68	34	62	40	62	31	50	24	20	52
Sept.	22	40	39	31	26	31	5	32	41	58
Oct.	52	20	74	28	78	21	130	21	80	55
Nov.	0	8	0	8	0	6	3	6	18	27
Dec.	0	7	0	5	0	6	0	7	0	16
Yearly	244	212	369	243	254	197	344	195	388	438

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

RAINFALL ON THE RIO GRANDE WATERSHED

IN THE UNITED STATES

IN MILLIMETERS

	Lewis Ranch		James Ranch		Rio Grande near Dryden		Ross Ranch		Foster Ranch		Pecos River near Langtry Station		Prosser Ranch No. 3	
Month	2003	Average	2003	Average	2003	Average	2003	Average	2003	Average	2003	Average	2003	Average
Jan.	0	11	0	11	0	8	3	9	0	0	28	11	581	438
Feb.	47	17	0	12	5	12	18	19	25	28	25	20		
Mar.	16	10	0	6	0	7	11	16	23	23	30	30		
April	30	27	0	15	0	16	25	23	33	33	54	54		
May	46	40	0	25	0	27	32	45	51	99	48	48		
June	30	40	0	31	27	17	38	43	127	104	61	61		
July	33	31	0	23	127	28	25	30	27	91	44	44		
Aug.	65	48	5	40	33	28	25	30	27	126	66	66		
Sept.	48	67	21	46	65	33	59	51	127	104	55	55		
Oct.	93	41	19	25	76	27	44	44	23	10	27	27		
Nov.	29	19	1	14	5	15	10	23	10	10	27	27		
Dec.	0	12	0	10	0	11	0	12	3	3	15	15		
Yearly	437	363	46	258	338	233	430	351	581	438				

	Devils River at Cauthorn Ranch		Prosser Ranch No. 1		Dead Man's Canyon near Comstock		Prosser Ranch No. 2		Walker Ranch		
Month	2003	Average	2003	Average	2003	Average	2003	Average	2003	Average	
Jan.	1	12	0	10	6	10	0	9	0	10	
Feb.	28	21	11	20	6	18	16	22	13	20	
Mar.	11	24	0	15	20	13	0	13	3	17	
April	30	26	0	24	0	26	5	24	0	23	
May	28	48	8	51	46	47	13	49	15	55	
June	86	59	109	40	107	45	73	44	95	50	
July	83	29	49	46	36	47	23	40	19	37	
Aug.	141	36	20	36	25	35	64	44	3	26	
Sept.	61	47	51	55	56	47	113	58	76	54	
Oct.	117	55	64	42	111	44	97	43	74	39	
Nov.	5	24	13	22	18	19	8	20	10	20	
Dec.	0	15	0	11	0	12	0	11	0	12	
Yearly	591	396	325	372	431	363	412	377	308	363	

	Harlow Ranch		Ed Crane Ranch		H. K. Fawcett Ranch		Brotherton Ranch		A. A. Baker Ranch		
Month	2003	Average	2003	Average	2003	Average	2003	Average	2003	Average	
Jan.	0	10	4	19	2	15	9	15	3	12	
Feb.	45	20	20	26	22	21	14	24	19	21	
Mar.	0	15	23	21	22	22	16	19	13	18	
April	0	24	0	35	0	36	1	23	1	29	
May	13	46	37	66	50	61	25	45	46	49	
June	39	47	72	49	41	37	69	46	73	44	
July	68	33	65	47	185	45	52	37	133	45	
Aug.	0	32	109	37	120	56	19	39	56	43	
Sept.	3	48	36	62	71	71	91	59	75	65	
Oct.	94	44	149	53	139	57	111	45	183	45	
Nov.	0	21	17	29	9	27	16	18	7	20	
Dec.	0	12	0	19	0	16	0	12	0	13	
Yearly	262	352	532	463	661	464	423	382	609	404	

	Zuberbueler Ranch		Comstock		Martin King Ranch		Goldwire Ranch		H. T. Miers Ranch Headquarters		
Month	2003	Average	2003	Average	2003	Average	2003	Average	2003	Average	
Jan.	8	14	6	14	6	13	8	13	8	14	
Feb.	18	28	16	21	21	19	13	18	5	25	
Mar.	20	23	16	18	37	16	5	24	14	24	
April	0	25	0	31	0	21	15	37	14	41	
May	38	58	31	48	21	44	80	59	3	59	
June	56	48	49	48	54	44	69	55	38	60	
July	87	53	123	39	41	36	89	51	193	45	
Aug.	20	32	15	43	17	37	142	62	51	54	
Sept.	50	57	35	55	61	60	84	54	99	59	
Oct.	144	41	158	44	107	51	107	53	99	62	
Nov.	8	24	6	18	11	17	3	30	8	25	
Dec.	0	17	0	15	0	13	0	16	0	18	
Yearly	449	420	455	394	376	371	615	472	532	486	

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

RAINFALL ON THE RIO GRANDE WATERSHED

IN THE UNITED STATES

IN MILLIMETERS

	H. T. Miers Ranch No. 2		Gillis Ranch Headquarters		Pafford Crossing		Tuffy Whitehead Ranch		Hutto Ranch No. 2	
Month	2003	Average	2003	Average	2003	Average	2003	Average	2003	Average
Jan.	4	12	7	17	8	13	4	9	12	14
Feb.	8	21	10	26	12	19	6	20	6	23
Mar.	21	28	8	26	3	19	17	22	18	21
April	1	35	0	43	13	32	1	32	2	42
May	96	65	105	68	66	46	43	45	109	52
June	108	56	61	64	45	50	38	45	38	57
July	129	43	93	59	122	48	104	42	114	48
Aug.	73	56	80	66	97	55	42	39	43	55
Sept.	67	66	83	58	51	63	39	62	102	75
Oct.	81	54	105	61	107	53	88	41	103	51
Nov.	3	25	120	38	3	25	1	21	8	24
Dec.	0	19	0	21	0	16	0	12	0	15
Yearly	591	480	672	547	527	439	383	390	555	477

	Lowry Ranch No. 2		Amistad Reservoir near Comstock		Evans Creek near Comstock		Sellers Ranch		J. G. Brite Ranch	
Month	2003	Average	2003	Average	2003	Average	2003	Average	2003	Average
Jan.	2	12	5	10	0	8	5	10	3	11
Feb.	5	19	5	18	0	17	40	18	2	18
Mar.	15	23	14	15	0	15	17	17	17	21
April	0	34	0	27	0	21	0	28	0	32
May	44	53	26	38	36	35	56	45	66	50
June	67	55	26	40	11	35	48	59	28	54
July	56	47	77	31	53	39	89	36	94	40
Aug.	55	58	90	33	13	39	38	42	53	44
Sept.	59	60	59	45	37	49	72	54	75	67
Oct.	101	47	98	42	81	42	117	50	90	48
Nov.	8	24	4	17	3	20	20	23	10	20
Dec.	0	16	0	10	0	12	0	14	0	15
Yearly	412	448	404	326	234	332	502	396	438	420

	Devils Lake		Big Satan Creek Station		Rough Canyon near Del Rio		Stewart Ranch		Gillis Ranch	
Month	2003	Average	2003	Average	2003	Average	2003	Average	2003	Average
Jan.	4	15	8	14	0	12	1	12	7	12
Feb.	5	20	6	21	4	20	2	20	0	22
Mar.	18	19	23	28	2	25	15	20	18	28
April	0	37	0	35	0	29	0	36	0	35
May	63	54	97	51	56	59	54	51	52	59
June	33	58	66	52	33	59	85	55	32	52
July	30	36	109	52	144	46	72	47	120	52
Aug.	59	45	99	65	91	56	21	46	36	44
Sept.	78	59	51	52	108	65	88	64	40	69
Oct.	95	48	94	57	114	59	95	50	114	44
Nov.	8	21	0	27	178	37	4	24	25	29
Dec.	0	18	0	18	0	19	0	15	0	18
Yearly	393	430	553	472	730	486	437	440	444	464

	Buoy No. 11		North Fork San Pedro		Amistad Dam		Long Ranch		Middle Fork San Pedro	
Month	2003	Average	2003	Average	2003	Average	2003	Average	2003	Average
Jan.	5	11	0	12	2	14	10	14	19	11
Feb.	8	19	4	20	2	21	4	22	5	20
Mar.	14	19	20	23	4	23	13	23	9	21
April	0	31	5	35	0	37	0	35	0	31
May	30	51	58	55	53	56	142	58	86	51
June	36	46	126	62	15	53	0	55	20	52
July	98	37	94	56	123	44	133	47	41	44
Aug.	63	38	61	57	57	50	49	41	31	47
Sept.	103	50	84	63	28	81	88	58	97	57
Oct.	83	44	128	54	20	45	109	49	114	54
Nov.	5	19	31	27	6	24	5	22	0	24
Dec.	0	11	0	18	2	17	0	17	0	17
Yearly	445	376	611	482	312	465	553	441	422	429

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IN MILLIMETERS

	Cliff Ranch No. 1		Hutto Ranch No. 1		Lewis Ranch		Laughlin Air Force Base		Wardlaw Standard Ranch	
Month	2003	Average	2003	Average	2003	Average	2003	Average	2003	Average
Jan.	2	13	2	12	17	15	8	15	10	20
Feb.	6	23	0	20	22	27	4	26	15	29
Mar.	17	25	17	20	13	25	5	22	36	32
April	1	38	2	40	0	43	14	49	16	40
May	65	64	112	55	94	62	131	58	36	58
June	101	58	109	61	71	69	15	69	104	80
July	105	47	130	53	108	44	46	59	99	44
Aug.	30	51	82	53		62	4	50	71	46
Sept.	66	75	97	69	81	66	29	62	91	56
Oct.	92	53	116	53	38	68	51	62	62	65
Nov.	3	26	7	23	14	30	7	27	15	34
Dec.	0	17	0	14	0	20	0	16	0	22
Yearly	488	490	674	473		531	314	515	555	526

	Maverick County Canal Headgate		Pinto Creek Station		Las Moras Creek		Eagle Pass		Trees Farm	
Month	2003	Average	2003	Average	2003	Average	2003	Average	2003	Average
Jan.	0	13	10	13	10	18	10	20	7	16
Feb.	0	24	32	19	14	24	27	24	18	22
Mar.	0	17	13	20	13	18	9	20	6	14
April	13	37	10	38	38	35	47	42	23	42
May	165	58	168	60	70	52	19	79	10	69
June	51	60	99	63	13	67	114	74	67	61
July	0	40	147	42	170	39	180	52	132	39
Aug.	0	36	13	47	8	44	61	54	65	40
Sept.	286	67	104	68	87	83	170	81	169	67
Oct.	76	58	67	62	80	64	79	57	55	61
Nov.	0	24	11	28	8	25	7	25	4	21
Dec.	0	18	0	16	0	19	0	20	0	17
Yearly	591	452	674	476	511	488	723	548	556	469

	El Indio		Van Dalsen Farm		Keisling Farm		Apache Ranch		Corralitos Ranch	
Month	2003	Average	2003	Average	2003	Average	2003	Average	2003	Average
Jan.	11	20	9	17	12	19	22	21	15	21
Feb.	31	25	34	23	38	24	23	21	97	26
Mar.	9	18	28	15	30	18	4	15	25	19
April	23	43	20	45	1	42	40	46	53	29
May	19	77	18	70	27	67	5	63	18	57
June	74	60	51	56	65	64	9	54	51	55
July	128	37	85	37	110	36	39	48	97	39
Aug.	30	46	74	43	64	40	25	46	112	55
Sept.	137	76	146	78	113	69	138	75	231	81
Oct.	61	58	71	58	59	53	150	65	146	56
Nov.	13	22	10	24	11	22	26	26	31	27
Dec.	0	18	0	19	0	21	1	22	1	19
Yearly	536	500	546	485	530	475	482	502	877	484

	Huisache Ranch		Zapata		Falcon Dam		Roma (Int'l. Bridge)		Garciasville	
Month	2003	Average	2003	Average	2003	Average	2003	Average	2003	Average
Jan.	17	21	18	23	16	22	28	22	25	22
Feb.	58	26	76	25	31	24	30	25	30	26
Mar.	28	20	16	17	20	16	17	15	20	15
April	50	32	51	36	21	33	19	33	21	29
May	20	57	20	63	62	60	70	50	66	65
June	46	59	60	57	10	62	12	57	32	72
July	102	40	79	38	56	33	58	34	59	33
Aug.	56	45	81	50	47	57	64	47	56	43
Sept.	259	97	285	102	291	107	238	107	240	88
Oct.	145	57	148	51	176	52	247	51	318	49
Nov.	31	26	39	28	84	31	66	25	65	27
Dec.	1	21	1	23	1	20	1	15	1	20
Yearly	813	501	874	513	815	517	850	481	933	489

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Month	Los Ebanos		La Joya		Penitas (Edinburg Pumping Plant)		HCWCID #6 Goodwin Pump No. 3		HCWCID #6 Goodwin Pump No. 4B	
	2003	Average	2003	Average	2003	Average	2003	Average	2003	Average
Jan.	25	23	0	22	17	29	0	30	13	28
Feb.	13	23	32	23	55	26	25	29	38	26
Mar.	28	15	46	14	19	18	38	23	38	18
April	0	29	0	21	47	29	32	36	38	29
May	0	48	0	46	0	57	0	58	64	54
June	28	57	28	58	0	70	41	68	51	64
July	0	31	38	28	71	36	133	42	76	32
Aug.	0	37	0	28	59	54	89	52	114	47
Sept.	49	75	89	73	37	84	324	91	267	90
Oct.	297	56	342	56	0	63	305	73	76	69
Nov.	0	23	0	23	0	23	64	28	51	26
Dec.	0	22	0	25	0	24	0	29	0	28
Yearly	440	439	575	417	305	513	1,051	559	826	511

Month	United Irrigation District		Edinburg City Water Plant		Anzalduas Dam		Mercedes (IBWC) LRGFCP Office		Mercedes Pump	
	2003	Average	2003	Average	2003	Average	2003	Average	2003	Average
Jan.	13	28	28	35	23	26	21	13	19	33
Feb.	11	27	41	30	21	32	5	15	12	18
Mar.	25	26	59	23	38	24	38	43	93	41
April	25	31	15	36	44	37	39	27	43	33
May	0	73	6	57	35	57	22	50	4	77
June	19	66	23	61	38	59	37	43	70	68
July	13	34	49	37	31	36	25	29	32	44
Aug.	51	48	116	57	115	52	50	48	70	58
Sept.	239	80	264	96	386	102	235	127	371	103
Oct.	257	67	174	59	202	62	132	80	117	66
Nov.	51	22	77	27	41	26	26	41	22	32
Dec.	0	23	1	31	3	20	7	23	6	42
Yearly	704	525	853	549	977	533	637	539	859	615

Month	La Feria Pumping Plant		La Feria Materials Yard		San Benito Pump		CCWCID #11 Bayview Dist. Off.		Brownsville Irrig. and Drainage Dist.	
	2003	Average	2003	Average	2003	Average	2003	Average	2003	Average
Jan.	28	40	30	39	1	34	0	40	15	22
Feb.	18	41	19	46	1	28	0	37	0	23
Mar.	152	31	70	30	0	24	32	21	10	33
April	13	50	25	44	41	37	0	43	0	28
May	0	71	0	67	0	68	0	60	20	43
June	53	76	67	83	41	63	158	60	108	78
July	28	49	58	53	43	39	70	40	79	9
Aug.	33	75	66	65	15	61	61	65	152	78
Sept.	221	152	196	130	118	110	124	131	268	104
Oct.	157	98	157	82	175	75	106	71	168	104
Nov.	0	50	60	39	8	33	0	41	13	48
Dec.	0	38	3	39	0	33	0	33	0	21
Yearly	703	771	751	717	443	605	551	642	833	591

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Tabulated below, in approximate downstream order, are monthly records of Mexican rainfall stations with averages for their periods of record. For location, elevation, period of record, type of gage in use, watershed subdivision in which the station is located, and the observer, see alphabetical listing of these stations following rainfall data. These rainfall records have not been published elsewhere. Records of daily rainfall amounts, where available, are on file in the offices of the Mexican Section of the Commission.

Detailed listings of the months and years for which records are available through 1970 may be found under "Index to Precipitation Records" in Water Bulletins 10, 14, 26, and Supplement 40A.

	Cd. Juarez, Chihuahua		Escalon, Chihuahua		Jimenez, Chihuahua		Bachiniva, Chihuahua		La Boquilla, Chihuahua	
Month	2003	Average	2003	Average	2003	Average	2003	Average	2003	Average
Jan.	0	10	11	10	2	7	24	13	4	7
Feb.	37	11	18	5	8	4	12	6	5	5
Mar.	6	9	0	4	5	3	0	7	4	3
April	0	7	3	11	1	4	5	6	2	6
May	0	8	12	19	22	14	0	7	37	14
June	6	18	34	46	59	41	28	39	17	35
July	25	39	65	63	54	78	65	129	64	71
Aug.	5	42	11	71	25	63	54	115	30	71
Sept.	0	34	111	73	112	56	64	68	76	69
Oct.	11	25	14	29	82	26	28	28	91	21
Nov.	15	13	14	8	11	7	0	8	6	8
Dec.	0	15	0	9	0	6	0	12	0	8
Yearly	105	231	293	348	381	309	280	438	336	318

	Camargo, Chihuahua		Las Virgenes, Chihuahua		Delicias, Chihuahua		Km. 135, Chihuahua		La Trasquila, Chihuahua	
Month	2003	Average	2003	Average	2003	Average	2003	Average	2003	Average
Jan.	4	9	5	7	4	8	11	6	0	9
Feb.	15	7	15	4	20	4	16	5	10	7
Mar.	0	5	0	2	0	3	0	2	1	4
April	1	5	0	6	0	7	6	7	0	6
May	9	13	12	9	5	10	11	10	4	8
June	7	37	14	31	16	32	7	29	1	28
July	104	74	94	67	62	62	29	55	36	81
Aug.	51	67	31	64	38	63	19	66	36	66
Sept.	73	64	54	56	26	55	12	67	21	70
Oct.	156	27	87	22	47	22	2	22	57	26
Nov.	10	10	0	6	0	7	2	8	0	8
Dec.	0	10	0	8	0	9	0	8	0	10
Yearly	430	328	312	282	218	282	115	285	166	323

	Presa Luis L. Leon, Chihuahua		Ojinaga (IB&WC), Chihuahua		Ojinaga (M.S. of Mexico), Chihuahua		La Chuparrosa, Coahuila		La Amistad, Coahuila	
Month	2003	Average	2003	Average	2003	Average	2003	Average	2003	Average
Jan.	1	6	1	9	2	7	0	8	7	15
Feb.	17	5	32	9	48	7	3	14	9	22
Mar.	0	3	0	4	2	4	13	13	15	28
April	0	7	0	9	0	8	0	25	0	32
May	4	14	1	14	3	15	32	34	47	57
June	22	32	22	33	26	31	38	35	27	53
July	72	63	22	39	33	39	88	33	102	43
Aug.	48	70	46	40	52	38	75	39	55	31
Sept.	17	45	11	38	12	39	66	48	96	65
Oct.	162	27	57	24	81	25	108	37	123	53
Nov.	0	8	0	9	0	9	3	17	13	26
Dec.	0	9	0	8	0	10	0	9	1	17
Yearly	343	289	192	236	259	232	426	312	495	442

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	Presa Centenario, Coahuila		Cd. Acuna, Coahuila		Presa Cabeceras, Coahuila		Presa San Miguel, Coahuila		Palestina, Coahuila	
Month	2003	Average	2003	Average	2003	Average	2003	Average	2003	Average
Jan.	16	14	7	14	6	12	11	15	10	19
Feb.	12	22	14	23	10	18	15	23	2	25
Mar.	13	26	18	21	43	21	26	24	7	22
April	9	39	7	44	5	43	8	37	16	43
May	48	66	192	63	105	63	147	70	180	68
June	73	70	31	57	67	74	124	82	55	65
July	69	43	103	44	105	65	208	66	111	53
Aug.	82	57	15	44	90	77	36	72	140	58
Sept.	76	97	78	95	103	98	98	92	87	79
Oct.	41	59	108	64	85	63	209	60	106	58
Nov.	26	23	13	22	5	27	5	28	14	23
Dec.	6	15	0	16	T	14	0	15	3	18
Yearly	510	605	490	616	580	887	584	731	531	

	Emiliano Zapata, Coahuila		Jimenez, Coahuila		Piedras Negras, Coahuila		Villa Hidalgo, Coahuila		Nuevo Laredo (Sur), Tamaulipas	
Month	2003	Average	2003	Average	2003	Average	2003	Average	2003	Average
Jan.	14	20	9	17	10	19	32	19	21	16
Feb.	8	28	14	23	27	22	19	21	48	25
Mar.	19	34	12	21	10	19	11	18	14	12
April	159	45	28	43	18	47	33	44	60	40
May	145	77	90	58	38	86	23	72	71	84
June	156	106	107	70	91	70	86	59	105	50
July	146	59	147	45	176	56	120	32	93	45
Aug.	42	57	26	47	44	55	75	52	36	42
Sept.	100	63	131	72	168	82	137	78	161	69
Oct.	76	50	50	67	111	64	242	57	115	70
Nov.	0	40	9	29	6	23	20	25	34	34
Dec.	0	19	4	17	T	18	0	19	1	21
Yearly	865	598	627	509	699	561	798	496	759	508

	Sabinas, Coahuila		Presa Carranza, Coahuila		Progreso, Coahuila		Ocampo, Coahuila		Monclova, Coahuila	
Month	2003	Average	2003	Average	2003	Average	2003	Average	2003	Average
Jan.	11	14	13	17	9	12	3	11	16	11
Feb.	14	17	19	16	25	17	0	7	39	13
Mar.	24	14	6	14	7	11	10	6	10	8
April	7	32	9	30	18	28	0	16	2	14
May	101	71	50	51	48	49	0	32	46	36
June	131	55	32	47	41	53	62	41	28	36
July	24	45	45	28	9	31	23	37	91	45
Aug.	34	52	48	47	14	45	0	37	9	57
Sept.	180	82	157	80	168	74	84	46	153	80
Oct.	118	48	91	44	152	49	54	27	182	33
Nov.	9	16	10	15	16	17	0	10	13	15
Dec.	4	12	T	15	1	12	10	12	0	15
Yearly	657	458	480	404	508	398	246	282	589	363

	Anahuac, Nuevo Leon		Candela, Coahuila		Espinazo, Nuevo Leon		Garza Ayala, Nuevo Leon		Nueva Cd. Guerrero, Tamaulipas	
Month	2003	Average	2003	Average	2003	Average	2003	Average	2003	Average
Jan.	15	19	27	16	15	24	31	21	16	23
Feb.	29	19	41	12	30	11	23	16	27	24
Mar.	6	13	8	6	21	8	9	17	17	14
April	19	31	10	27	3	23	9	35	27	36
May	205	67	28	38	20	46	51	51	33	61
June	27	51	30	47	55	31	65	61	9	57
July	31	37	22	50	74	41	120	72	106	37
Aug.	23	61	17	52	10	33	125	62	57	49
Sept.	237	83	212	77	5	47	367	113	290	104
Oct.	169	48	72	39	33	31	125	60	199	51
Nov.	28	20	15	19	4	13	42	32	114	32
Dec.	19	12	11	1	12	30	25	0	19	19
Yearly	468	494	394	271	320	997	565	895	507	

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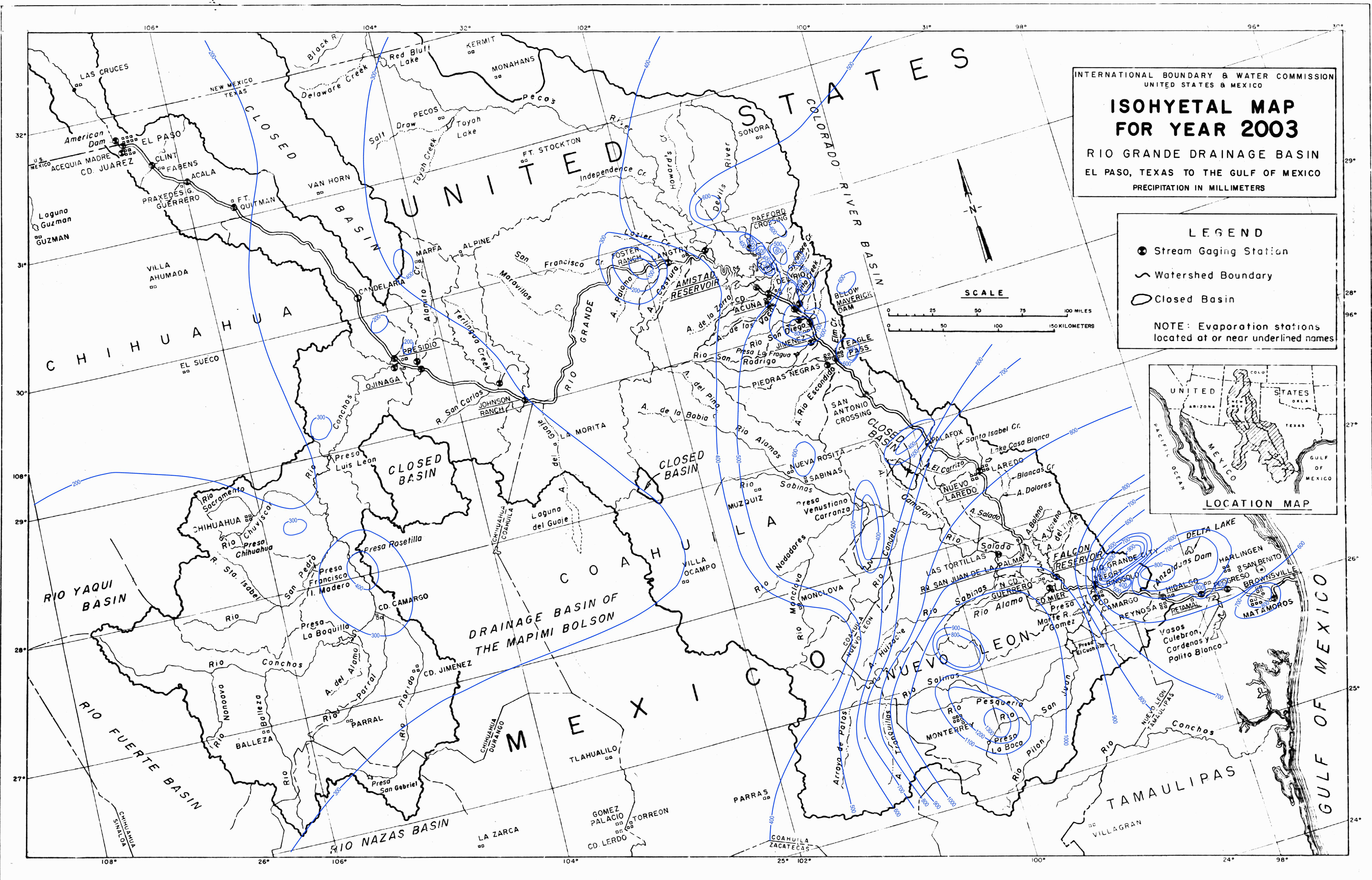
IN MILLIMETERS

	Cd. Mier, Tamaulipas		General Cepeda, Coahuila		Saltillo, Coahuila		Cienega de Flores, Nuevo Leon		Ejido Marin, Nuevo Leon	
Month	2003	Average	2003	Average	2003	Average	2003	Average	2003	Average
Jan.	2	27	8	13	4	16	22	28	10	27
Feb.	19	28	12	11	28	12	23	22	31	16
Mar.	12	14	0	7	6	9	23	25	24	19
April	20	35	0	12	7	17	3	34	3	27
May	24	64	1	23	10	29	96	62	101	53
June	7	63	31	52	25	50	108	80	112	69
July	127	36	77	76	291	66	90	56	90	51
Aug.	117	63	48	72	91	61	70	101	86	66
Sept.	362	114	152	69	211	64	180	136	166	108
Oct.	195	56	108	31	114	31	109	60	82	42
Nov.	114	33	3	13	7	19	13	26	10	18
Dec.	0	21	3	13	5	16	3	26	8	24
Yearly	999	554	443	392	799	390	740	656	723	520

	Tepehuaje, Nuevo Leon		Gomez Farias, Coahuila		Monterrey, Nuevo Leon		Villa Altende, Nuevo Leon		Casillas, Nuevo Leon	
Month	2003	Average	2003	Average	2003	Average	2003	Average	2003	Average
Jan.	28	34	24	34	77	18	179	33	23	
Feb.	20	17	40	17	32	17	20	31	13	
Mar.	6	21	0	7	6	20	40	33	8	13
April	26	45	15	21	4	30	0	67	0	27
May	109	83	40	41	131	47	45	97	26	55
June	267	86	115	58	134	73	81	135	72	76
July	26	51	74	55	61	56	33	84	76	64
Aug.	89	76	32	57	122	78	249	130	122	78
Sept.	280	144	162	54	280	156	529	242	143	118
Oct.	218	70	69	29	198	80	71	131	81	63
Nov.	7	18	6	13	59	29	40	0	0	17
Dec.	19	0	18	28	18	18	29	0	0	14
Yearly		664	577	404	1,132	622		1,052		561

	Montemorelos, Nuevo Leon		El Realito, Nuevo Leon		Agua Blanca, Nuevo Leon		Dr. Gonzales, Nuevo Leon		El Canada, Nuevo Leon	
Month	2003	Average	2003	Average	2003	Average	2003	Average	2003	Average
Jan.	79	25	16	30	31	22	7	36	39	15
Feb.	30	24	15	12	43	13	24	15	55	17
Mar.	37	30	13	18	18	15	18	20	15	22
April	49	56	12	40	13	23	6	36	8	25
May	138	84	77	71	13	49	131	64	26	57
June	131	98	166	75	74	64	62	73	121	64
July	7	60	35	47	191	87	74	43	28	30
Aug.	103	102	140	80	216	91	31	72	84	56
Sept.	563	186	404	118	354	144	29	94	216	130
Oct.	157	97	172	51	95	64	162	45	119	73
Nov.	14	38	2	15	2	21	7	27	28	23
Dec.	79	25	1	25	3	15		42		10
Yearly	1,387	825	1,053	582	1,053	608		567		522

	Retamal, Tamaulipas	
Month	2003	Average
Jan.	17	26
Feb.	14	27
Mar.	54	21
April	22	34
May	3	60
June	23	60
July	35	38
Aug.	41	62
Sept.	217	90
Oct.	95	63
Nov.	5	30
Dec.	0	30
Yearly	526	541



WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

AVERAGE RAINFALL ON SUBDIVISIONS OF THE RIO GRANDE WATERSHED
With Averages for the 130 Years 1871 - 2003, Inclusive

In Millimeters

The Precipitation records of all stations on or adjacent to the watershed subdivisions listed below have been used, with proper weighting for area, in calculating the average rainfalls shown here. The drainage area for each subdivision is shown in parentheses. The hundreds of individual records are delineated in the various "Indexes to Precipitation Records" shown in Water Bulletins Nos. 10, 14, 22, 26, and Supplement 40A.

	El Paso to Fort Quitman (6,933 Square Km)		Fort Quitman to Above Rio Conchos (7,915 Square Km)		* Above Rio Conchos to Johnson Ranch (9,795 Square Km)		Johnson Ranch to Foster Ranch (33,623 Square Km)	
Month	2003	Period Average	2003	Period Average	2003	Period Average	2003	Period Average
Jan.	3	11	0	10	8	9	10	12
Feb.	32	10	24	7	20	5	17	10
Mar.	3	8	6	6	8	5	4	9
April	0	7	0	9	0	10	1	19
May	0	11	2	15	2	20	36	36
June	8	20	13	32	40	30	48	42
July	22	54	56	70	45	47	39	45
Aug.	10	47	25	60	64	48	37	50
Sept.	18	36	23	48	20	40	15	53
Oct.	11	23	49	26	64	23	82	32
Nov.	1	11	0	10	1	9	3	15
Dec.	0	15	0	13	0	10	0	13
Yearly	108	253	198	306	272	258	266	336

	Pecos River below Sheffield (8,780 Square Km)		# Foster Ranch to Amistad Dam (7,249 Square Km)		Devils River (11,150 Square Km)		+ Amistad Dam to Eagle Pass (4,209 Square Km)	
Month	2003	Period Average	2003	Period Average	2003	Period Average	2003	Period Average
Jan.	2	17	2	17	2	17	6	18
Feb.	38	22	6	22	39	20	9	23
Mar.	19	19	9	24	18	27	18	25
April	10	43	0	40	9	43	11	42
May	35	47	21	69	74	65	123	71
June	72	60	41	61	68	65	62	64
July	52	45	100	45	53	46	76	47
Aug.	68	50	52	46	65	54	32	48
Sept.	65	62	63	72	62	72	157	75
Oct.	118	48	99	51	98	56	83	53
Nov.	16	24	6	26	12	37	8	26
Dec.	1	18	0	21	0	24	0	21
Yearly	496	455	399	494	500	525	585	513

	! Eagle Pass to Laredo (9,829 Square Km)		** Laredo to Falcon Dam (8,726 Square Km)		## Falcon Dam to Rio Grande City (1,212 Square Km)		United States Side Below Rio Grande City (2,554 Square Km)	
Month	2003	Period Average	2003	Period Average	2003	Period Average	2003	Period Average
Jan.	18	19	17	20	18	23	18	32
Feb.	29	20	74	22	28	22	23	29
Mar.	13	23	21	21	20	22	44	26
April	27	41	47	36	22	31	25	35
May	14	76	26	78	32	60	11	69
June	37	62	47	52	31	55	46	64
July	75	38	84	51	55	46	45	43
Aug.	42	56	83	49	45	52	55	58
Sept.	132	75	264	79	251	92	177	110
Oct.	112	49	152	45	215	51	195	66
Nov.	19	25	43	38	77	22	30	35
Dec.	1	24	1	22	0	18	0	31
Yearly	519	508	859	513	794	494	669	598

* Excluding Rio Conchos, Alamito Creek, and Terlingua Creek

Excluding Pecos and Devils Rivers

+ Excluding Arroyo Las Vacas, San Felipe Creek, Pinto Creek, Rio San Diego, and Rio San Rodrigo

! Excluding Rio Escondido

** Excluding Rio Salado above old Cd. Guerrero

Excluding Rio Alamo and Rio San Juan

LOCATION OF RAINFALL STATIONS ON THE RIO GRANDE WATERSHED

The precipitation records of stations listed below began on the date shown and extend through the current year. For detailed information regarding sources of data, specific periods of record, and other pertinent matters relative to these and additional rainfall stations on the Rio Grande watershed, see "Index to Precipitation Records" in Water Bulletins Nos. 10, 14, 22, 26, and Supplement 40A. With the exception of Las Cruces, New Mexico, all United States precipitation stations listed below are in Texas, while those in Mexico are in the indicated state as shown.

IN THE UNITED STATES

NAME OF STATION	TYPE GAGE	LATI- TUDE	LONGI- TUDE	ELEV. METERS	RECORD BEGAN	WATERSHED SUBDIVISION	OBSERVER
A.A. Baker Ranch	R	29° 44'	101° 08'	524	July 1962	Devils River	I. B. & W. C.
Adobes Ranch	C	29° 46'	104° 34'	777	# 1950	Fort Quitman - Above Rio Conchos	I. B. & W. C.
American Dam	S	31° 47'	106° 32'	1,137	# 1938	El Paso - Fort Quitman	I. B. & W. C.
Amistad Dam	R	29° 27'	101° 01'	351	July 1962	Foster Ranch - Amistad Dam	I. B. & W. C.
Amistad Reservoir near Comstock	C	29° 32'	101° 12'	344	# 1970	Foster Ranch - Amistad Dam	I. B. & W. C.
Anzalduas Dam	S	26° 08'	98° 20'	39	1972	Lower Rio Grande Valley	I. B. & W. C.
Apache Ranch	C	27° 56'	99° 56'	152	#May 1953	Eagle Pass - Laredo	Ranch Foreman
Big Satan Creek station	C	29° 34'	100° 57'	351	Nov. 1968	Devils River	I. B. & W. C.
Bill Shannon Ranch	C	29° 57'	104° 40'	817	#July 1956	Fort Quitman - Above Rio Conchos	Bill Shannon
Brotherton Ranch	S	29° 42'	101° 19'	427	1961	Langtry - Below Amistad Dam	Perry Calk
Brownsville Irrigation and Drainage District	S	25° 52'	97° 27'	!	1992	Lower Rio Grande Valley	Joe Barrera
Buoy No. 11	C	29° 30'	101° 10'	**	#Dec. 1969	Foster Ranch - Amistad Dam	I. B. & W. C.
CCWID # 11 (Bayview Dist. Off.)	S	26° 08'	97° 21'	8	# 1952	Lower Rio Grande Valley	CCWID #11
Cliff Lowry Ranch No. 1	R	29° 28'	100° 52'	454	July 1962	Devils River	I. B. & W. C.
Comstock	R	29° 41'	101° 10'	466	#May 1939	Foster Ranch - Amistad Dam	I. B. & W. C.
Corralitos Ranch	C	27° 07'	99° 25'	105	1953	Laredo - Falcon Dam	I. B. & W. C.
Dead Man's Canyon near Comstock	C	29° 47'	101° 19'	399	Sept. 1967	Pecos River below Sheffield	I. B. & W. C.
Devils Lake	R	29° 34'	100° 58'	349	#May 1939	Devils River	I. B. & W. C.
Devils River at Cauthorn Ranch	S	30° 04'	101° 06'	505	#April 1976	Devils River	I. B. & W. C.
Eagle Pass	S	28° 42'	100° 30'	248	1964	Eagle Pass - Laredo	I. B. & W. C.
Ed Crane Ranch	S	29° 50'	101° 05'	497	# 1955	Devils River	E. J. Crane Jr.
Edinburg City Water Plant	S	26° 18'	98° 10'	30	# 1934	Lower Rio Grande Valley	City of Edinburg
El Indio	S	28° 31'	100° 19'	221	#June 1941	Eagle Pass - Laredo	Mrs. Courtney
Evans Creek near Comstock	C	29° 32'	101° 06'	360	#July 1969	Devils River	I. B. & W. C.
Falcon Dam	S	26° 33'	99° 08'	98	April 1950	Laredo - Falcon Dam	I. B. & W. C.
Fort Hancock Bridge	S	31° 16'	105° 51'	1,067	#April 1940	El Paso - Fort Quitman	I. B. & W. C.
Garciasville	R	26° 20'	98° 41'	61	#April 1957	Lower Rio Grande Valley	I. B. & W. C.
Gillis Headquarters	S	29° 36'	100° 47'	430	1968	Amistad Dam - Eagle Pass	Jake Schiller
Gillis Ranch	S	29° 40'	101° 03'	439	# 1965	Devils River	Walter Gillis
Goldwire Ranch	C	29° 44'	100° 57'	514	Nov. 1968	Devils River	I. B. & W. C.
Guayuco Arroyo	R	31° 10'	105° 40'	1,097	#May 1940	El Paso - Fort Quitman	I. B. & W. C.
HCWCID No. 6 Goodwin Pump No. 3	S	26° 16'	98° 24'	53	1953	Lower Rio Grande Valley	HCWCID No. 6
HCWCID No. 6 Goodwin Pump No. 4B	S	26° 18'	98° 22'	64	1953	Lower Rio Grande Valley	HCWCID No. 6
H.K. Fawcett Ranch	C	29° 52'	100° 53'	488	# 1941	Devils River	I. B. & W. C.
H.T. Fletcher Ranch	S	30° 12'	104° 16'	1,554	# 1939	Alamito Creek	Hayes Mitchell
H.T. Miers Ranch Headquarters	C	29° 44'	100° 50'	536	# 1957	Devils River	I. B. & W. C.
H.T. Miers Ranch No. 2	R	29° 43'	100° 53'	488	April 1964	Devils River	I. B. & W. C.
Harlow Ranch	C	29° 49'	101° 10'	517	#Mar. 1969	Devils River	I. B. & W. C.
Huisache Ranch	C	26° 57'	99° 21'	117	Aug. 1953	Laredo - Falcon Dam	I. B. & W. C.
Hutto Ranch No. 1	R	29° 30'	100° 50'	378	# 1964	Devils River	I. B. & W. C.
Hutto Ranch No. 2	R	29° 38'	100° 54'	369	# 1964	Devils River	I. B. & W. C.
J.G. Brite Ranch	R	29° 33'	101° 01'	351	#Sept. 1962	Devils River	I. B. & W. C.
Johnson Ranch	C	29° 01'	103° 23'	625	#July 1933	Johnson Ranch - Foster Ranch	I. B. & W. C.
Keisling Ranch	S	28° 23'	100° 17'	226	Dec. 1958	Eagle Pass - Laredo	I. B. & W. C.
Kerr Mitchell Ranch	S	30° 13'	104° 00'	1,356	#Mar. 1941	Alamito Creek	Mrs. K. Mitchell
La Feria Materials Yard	V	26° 10'	97° 50'	18	# 1960	Lower Rio Grande Valley	CCWCID #3
La Feria Pumping Plant	S	26° 03'	97° 50'	18	# 1952	Lower Rio Grande Valley	CCWCID #3
La Joya	C	26° 15'	98° 29'	46	#April 1957	Lower Rio Grande Valley	I. B. & W. C.
Las Cruces	S	32° 19'	106° 47'	1,187	1975	Caballo Dam - El Paso	I. B. & W. C.
Las Moras Creek	S	29° 00'	100° 38'	244	1958	Amistad Dam - Eagle Pass	I. B. & W. C.
Laughlin Air Force Base	S	29° 21'	100° 47'	329	Dec. 1958	Amistad Dam - Eagle Pass	U. S. A. F.

S Standard R Recording C Cumulative

Some months or years missing

V Visual ** Reservoir surface

LOCATION OF RAINFALL STATIONS ON THE RIO GRANDE WATERSHED

IN THE UNITED STATES							
NAME OF STATION	TYPE GAGE	LATI- TUDE	LONGI- TUDE	ELEV. METERS	RECORD BEGAN	WATERSHED SUBDIVISION	OBSERVER
Lewis Ranch	S	29° 32'	100° 40'	427	# 1964	Amistad Dam - Eagle Pass	B.C. Lewis Jr.
Lewis James Ranch	S	30° 11'	102° 07'	998	# 1966	Johnson Ranch - Foster Ranch	Lewis James
Long Ranch	R	29° 27'	100° 56'	347	Oct. 1971	Devils River	I. B. & W. C.
Los Ebanos	C	26° 14'	98° 34'	46	#April 1957	Lower Rio Grande Valley	I. B. & W. C.
Lowry Ranch No. 2	R	29° 37'	100° 55'	354	May 1965	Devils River	I. B. & W. C.
Martin King Ranch	R	29° 43'	101° 02'	445	#Nov. 1954	Foster Ranch - Amistad Dam	I. B. & W. C.
Maverick County Canal Headgate	S	29° 10'	100° 46'	265	#Mar. 1948	Amistad Dam - Eagle Pass	MCWCID #1
Mercedes LRGFCP Office	S	26° 07'	97° 56'	22	1994	Lower Rio Grande Valley	I. B. & W. C.
Mercedes Pump	S	26° 04'	97° 54'	!	1938	Lower Rio Grande Valley	I. B. & W. C.
Middle Fork San Pedro	C	29° 29'	100° 52'	357	#June 1969	Devils River	I. B. & W. C.
North Fork San Pedro	C	29° 31'	100° 53'	349	#June 1969	Devils River	I. B. & W. C.
Owens Ranch	S	30° 48'	102° 42'	686	#July 1963	Pecos River below Sheffield	Mrs. W. Owens
Pafford Crossing	C	29° 40'	101° 00'	360	Mar. 1960	Devils River	I. B. & W. C.
Pecos River near Langtry Station	C	29° 48'	101° 26'	384	July 1967	Pecos River below Sheffield	I. B. & W. C.
Penitas (Edinburg Pumping Plant)	S	26° 14'	98° 27'	30	July 1957	Lower Rio Grande Valley	M. Stevens
Pinto Creek Station	C	29° 09'	100° 43'	265	#Dec. 1958	Amistad Dam - Eagle Pass	I. B. & W. C.
Presidio (IBWC)	S	29° 34'	104° 23'	792	#Nov. 1949	Above Rio Conchos - Johnson Ranch	I. B. & W. C.
Prosser Ranch No. 1	C	29° 53'	101° 14'	521	Mar. 1965	Pecos River	
Prosser Ranch No. 2	C	29° 48'	101° 15'	564	#Mar. 1965	below Sheffield	I. B. & W. C.
Prosser Ranch No. 3	C	30° 02'	101° 16'	616	#Mar. 1965	Devils River	I. B. & W. C.
						Pecos River below Sheffield	I. B. & W. C.
Redford	C	29° 29'	104° 13'	762	#July 1954	Above Rio Conchos - Johnson Ranch	I. B. & W. C.
Rio Grande near Dryden	R	29° 48'	102° 08'	411	May 1976	Johnson Ranch - Foster Ranch	National Weather Service
Roma (International Bridge)	S	26° 24'	99° 01'	70	# 1941	Rio Grande City	I. B. & W. C.
Ross Foster Ranch	C	29° 45'	101° 46'	375	May 1961	Johnson Ranch - Foster Ranch	I. B. & W. C.
Rough Canyon near Del Rio	C	29° 34'	100° 56'	350	#June 1969	Devils River	I. B. & W. C.
San Benito Pump	S	26° 03'	97° 45'	15	Oct. 1933	Lower Rio Grande Valley	CCWCID No. 2
Sellers Ranch	C	29° 34'	101° 02'	363	#Mar. 1960	Devils River	I. B. & W. C.
Shafter	S	29° 49'	104° 19'	1,195	#July 1968	Above Rio Conchos - Johnson Ranch	Raymond Wylic
Stewart Ranch	R	29° 35'	100° 52'	405	#April 1960	Devils River	I. B. & W. C.
Study Butte	S	29° 19'	103° 32'	777	July 1977	Terlingua Creek	Shirley Willard
Terlingua Creek Station	C	29° 12'	103° 36'	675	#Mar. 1952	Terlingua Creek	I. B. & W. C.
Trees Farm	R	28° 38'	100° 25'	219	#Mar. 1959	Eagle Pass - Laredo	I. B. & W. C.
Tuffy Whitehead Ranch	R	29° 37'	101° 07'	433	July 1962	Devils River	I. B. & W. C.
United Irrigation District	S	26° 11'	98° 24'	!	#Aug. 1961	Lower Rio Grande Valley	United Irrig. District
Van Dalsem Farm	C	28° 27'	100° 19'	213	# 1959	Eagle Pass - Laredo	I. B. & W. C.
Walker Ranch	C	29° 49'	101° 13'	466	#Aug. 1969	Devils River	I. B. & W. C.
Wardlaw Standart Ranch	S	29° 18'	100° 38'	326	April 1977	Pinto Creek	Hadly Wardlaw
Zapata	S	26° 54'	99° 16'	116	1992	Laredo - Falcon Dam	I. B. & W. C.
Zuberbueler Ranch	S	29° 41'	101° 14'	445	#Feb. 1975	Foster Ranch - Amistad Dam	J.U. Zuberbueler

S Standard

R Recording

C Cumulative

! Not Available

Some months or years missing

LOCATION OF RAINFALL STATIONS ON THE RIO GRANDE WATERSHED

IN MEXICO

NAME OF STATION	TYPE GAGE	LATI- TUDE	LONGI- TUDE	ELEV. METERS	RECORD BEGAN	WATERSHED SUBDIVISION	OBSERVER
Allende, Nuevo Leon	S	25° 14'	100° 01'	474	1938	Rio San Juan	C. N. A.
Aqua Blanca, Nuevo Leon	S	25° 32'	100° 31'	2,290	1958	Rio San Juan	C. N. A.
Anahuac, Nuevo Leon	S	27° 15'	100° 08'	200	#June	Rio Salado	C. N. A.
Bachiniva, Chihuahua	S	28° 46'	107° 15'	1,980	1952	Rio Conchos	Meteor. Service of Mexico
Camargo, Chihuahua	S	27° 41'	105° 10'	1,223	#	1956	Rio Conchos
Meteor. Service of Mexico							
Candela, Coahuila	S	26° 50'	100° 39'	620	#	1970	Rio Salado
Casillas, Nuevo Leon	S	25° 11'	100° 12'	1,260	#	1958	Rio San Juan
Cd. Acuna, Coahuila	S	29° 20'	100° 57'	274	1951	Amistad Dam-Eagle Pass	C. I. L. A.
Cd. Juarez, Chihuahua	S	31° 44'	106° 24'	990	1903	El Paso-Ft Quitman	I. B. & W. C.
Cd. Mier, Tamaulipas	S	26° 26'	99° 09'	80	#	1955	Falcon Dam-Rio Grande C.
Cienega de Flores, N. L.	R	25° 57'	100° 10'	380	#	1938	Rio San Juan
Delicias, Chihuahua	S	28° 12'	105° 26'	1,173	#Aug.	1932	Rio Conchos
Dr. Gonzalez, N. L.	S	25° 51'	99° 55'	370		1992	Rio San Juan
Ejido Marin, Nuevo Leon	S	25° 51'	100° 01'	490	#	1979	Rio San Juan
El Canada, Nuevo Leon	S	25° 48'	100° 16'	470	#Jan.	1958	Rio San Juan
El Realito, Nuevo Leon	S	25° 16'	99° 18'	230	#	1970	Rio San Juan
Emiliano, Zapata, Coah.	S	29° 02'	100° 53'	210		1964	Amistad-Eagle Pass
Escalon, Chihuahua	S	26° 45'	104° 20'	1,169		1957	Rio Conchos
Espinazo, Nuevo Leon	S	26° 15'	101° 06'	825	#	1980	Rio Salado
Garza Ayala, Nuevo Leon	S	26° 29'	100° 03'	218	#	1968	Rio San Juan
General Cepeda, Coahuila	S	25° 22'	101° 28'	1,400	#	1926	Rio San Juan
Gomez Farias, Coahuila	S	24° 58'	101° 03'	!	#	1979	Rio San Juan
Jimenez, Chihuahua	S	27° 08'	104° 54'	1,380	#	1951	Rio Conchos
Meteor. Service of Mexico							
Jimenez, Coahuila	S	29° 04'	100° 40'	280		1951	Amistad Dam-Eagle Pass
Kilometro 135, Chihuahua	S	28° 22'	105° 36'	1,440		1962	Rio Conchos
La Amistad, Coahuila	S	29° 27'	101° 03'	329	#Feb.	1977	Amistad Dam-Eagle Pass
La Boquilla, Chihuahua	S	27° 32'	105° 24'	1,323	#June	1910	Rio Conchos
La Chupparosa, Coahuila	R	29° 30'	101° 15'	350	#	1970	Foster Ranch-Amistad Dam
La Trasquila, Chihuahua	S	29° 44'	107° 04'	1,441		1962	Rio Conchos
Las Virgenes, Chihuahua	S	28° 10'	105° 37'	1,300		1943	Lower Rio Grande Valley
Monclova, Coahuila	S	26° 54'	101° 25'	615		1897	Rio Salado
Montemorelos, Nuevo Leon	S	25° 10'	99° 50'	375		1904	Rio San Juan
Monterrey, Nuevo Leon	S	25° 40'	100° 16'	495		1896	Rio San Juan
Nueva Cd. Guerrero, Tamps.	S	26° 35'	99° 15'	106		1954	Laredo-Falcon Dam
Nuevo Laredo, Tamps.	S	27° 30'	99° 30'	126		1950	Laredo-Falcon Dam
Ocampo, Coahuila	S	27° 18'	102° 23'	1,050		1960	Rio Salado
Ojinaga, (M.S. of Mexico) Chihuahua	S	29° 33'	104° 24'	739		1954	Rio Conchos
Ojinaga, Chihuahua	S	29° 35'	104° 25'	780		1906	Rio Conchos
Palestina, Coahuila	S	29° 09'	100° 59'	330		1931	Amistad-Eagle Pass
Piedras Negras, Coahuila	S	28° 42'	100° 31'	250		1951	Eagle Pass-Laredo
Meteor. Service of Mexico							
Presa Cabeceras, Coahuila	S	29° 02'	101° 04'	348		1964	Eagle Pass-Laredo
Presa Centenario, Coah.	S	29° 12'	100° 56'	325		1964	Eagle Pass-Laredo
Presa El Retamal, Tamaulipas	S	26° 02'	98° 02'	25		1949	Lower Rio Grande Valley
Presa Luis L. Leon, Chih.	S	28° 59'	105° 16'	1,055		1964	Rio Conchos
Presa San Miguel, Coah.	S	29° 02'	100° 57'	!		1964	Eagle Pass-Laredo
Presa V. Carranza, Coah.	S	27° 31'	100° 37'	272		1927	Rio Salado
Progreso, Coahuila	S	27° 25'	101° 00'	360		1943	Rio Salado
Sabinas, Coahuila	S	27° 50'	101° 07'	339		1922	Rio Salado
Saltillo, Coahuila	S	25° 22'	101° 01'	1,790		1886	Rio San Juan
Tepehuaje, Nuevo Leon	S	25° 30'	99° 46'	250		1979	Rio San Juan
Villa Hidalgo, Coahuila	S	27° 47'	99° 52'	140		1951	Eagle Pass-Laredo

S Standard R Recording C Cumulative ! Not Available # Some months or years missing

EVAPORATION IN THE RIO GRANDE BASIN
IN THE UNITED STATES

In Millimeters

Tabulated below are records of evaporation observed at seven stations in Texas operated by the United States Section of the Commission from Presidio to Brownsville. At all stations, the exposure to wind was uniform and relatively unimpeded. The sites were kept cleared of all high brush and trees within 46 meters, and all brush, tall weeds, and other obstructions within 30 meters of the fenced enclosures. Within the enclosures all vegetation has been eradicated or kept trimmed to within 0.10 meter of the ground surface. For specific location of these stations, refer to data opposite same station name shown in "Location of Rainfall Stations on the Rio Grande Watershed," on preceding pages of this bulletin.

Records were obtained by means of:

1. Standard National Weather Service pan. A circular pan, 1.22 meters in diameter and 0.25 meter deep, made of 22-gage galvanized iron, is set on a wooden platform with the rim of the pan 0.41 meter above the ground. The water level is maintained between 0.05 and 0.08 meter below the rim of the pan and is measured with a micrometer gage. This type of pan was in operation at Amistad Dam and Falcon Dam.

2. A circular pan, 0.61 meter in diameter and 0.91 meter deep, made of 22-gage galvanized iron, is set in the ground with the rim of the pan 0.08 meter above the ground surface and the top covered with a circular screen of No. 4 (6 millimeter) galvanized hardware cloth. This type of pan, equipped with an automatic feed tank that maintains the water at a level 0.08 meter below the rim of the pan, was in operation at Martin King Ranch.

3. An evaporometer, developed by the United States Section of the Commission and calibrated against a 0.61 meter pan described above, was in operation at Presidio, Johnson Ranch, Long Ranch, and at a site 11.3 kilometers east of Brownsville.

Month	Presidio		Johnson Ranch		Martin King Ranch		Long Ranch	
	2003	Average 1949-2003	2003	Average 1949-2003	2003	Average 1956-2003	2003	Average 1971-2003
Jan.	78	80	108	97	207	95	96	61
Feb.	78	110	124	139	72	106	104	75
Mar.	173	176	279	226	91	170	117	113
April	236	220	382	287	239	214	198	151
May	328	265	521	352	292	242	208	166
June	427	281	407	357	268	281	198	204
July	385	267	452	360	264	320	149	225
Aug.	335	247	468	325	299	322	160	214
Sept.	224	199	303	257	195	239	75	156
Oct.	141	154	194	197	149	186	85	120
Nov.	95	104	124	123	111	129	56	75
Dec.	81	77	147	94	118	104	89	58
Total	2,581	2,180	3,509	2,814	2,305	2,408	1,535	1,618

Month	Amistad Dam		Falcon Dam		Brownsville	
	2003	Average 1963-2003	2003	Average 1956-2003	2003	Average 1958-2003
Jan.	108	98	78	104	92	79
Feb.	107	122	101	132	82	91
Mar.	234	203	176	208	119	120
April	297	253	241	255	173	148
May	342	283	340	301	127	146
June	343	328	357	341	156	157
July	302	371	354	388	113	183
Aug.	368	349	344	355	138	173
Sept.	215	253	182	247	96	134
Oct.	165	194	131	188	97	119
Nov.	116	131	112	132	120	96
Dec.	154	96	105	101	119	84
Total	2,751	2,681	2,521	2,752	1,432	1,530

EVAPORATION IN THE RIO GRANDE BASIN
IN MEXICO

In Millimeters

Tabulated below are records of evaporation observed at eight stations operated and maintained by the Mexican Section of the Commission. Seven stations are along the Rio Grande from Cd. Acuna, Coahuila to Cd. Mier, Tamaulipas, and one is located on the Rio Conchos near Ojinaga, Chihuahua. At all stations, except Ojinaga, the sites were kept cleared of all high brush and trees within 46 meters and of all brush and tall weeds within 30 meters of the fenced enclosures. The Ojinaga station is 9 meters landward of the east Rio Conchos levee with a concrete V-shaped irrigation ditch and road between the levee and the 8 x 8-meter woven wire pen, which encloses a 150-cm evaporation pan and a 70 x 50-cm shelter with thermometers. Inside the enclosures, all vegetation has been eradicated or kept trimmed to within 0.08 meter of the ground surface. The exposure to wind was uniform and relatively unimpeded. For specific location of these stations, refer to data opposite same station name shown in "Location of Rainfall Stations on the Rio Grande Watershed."

The type of pan used at all these stations was a standard National Weather Service-type pan, 1.22 meters in diameter and 254 millimeters inches deep, made of 22-gage galvanized iron, set on a wooden platform with the rim of the pan 406 millimeters above the ground. The water level was maintained between 51 and 76 millimeters below the rim of the pan and was measured with a micrometer gage.

Data for other evaporation stations in the Rio Grande basin in Mexico, which were operated by various Mexican agencies, are available in a Spanish water bulletin published by the Mexican Section of the Commission.

Month	Ojinaga, Chihuahua		La Amistad, Coahuila		Cd. Acuna, Coahuila		Jimenez, Coahuila	
	2003	Average 1954-2003	2003	Average 1977-2003	2003	Average 1951-2003	2003	Average 1951-2003
Jan.	89	87	88	90	65	81	58	89
Feb.	91	121	95	116	65	108	51	114
Mar.	132	195	207	183	153	179	120	176
April	156	241	256	229	174	209	139	200
May	233	306	287	257	229	236	179	229
June	231	324	304	292	217	274	175	267
July	292	315	288	336	217	309	165	300
Aug.	295	272	317	317	249	284	201	277
Sept.	219	212	197	234	149	203	109	200
Oct.	156	167	155	168	109	145	86	146
Nov.	108	107	101	107	71	90	56	95
Dec.	59	79	118	86	85	72	71	79
Total	2,061	2,426	2,413	2,415	1,783	2,190	1,410	2,172

Month	Villa Hidalgo, Coahuila		Nuevo Laredo, Tamaulipas		Nueva Cd. Guerrero, Tamaulipas		Cd. Mier, Tamaulipas	
	2003	Average 1951-2003	2003	Average 1964-2003	2003	Average 1954-2003	2003	Average 1955-2003
Jan.	59	88	81	98	83	87	102	93
Feb.	82	116	85	123	95	110	64	120
Mar.	153	176	155	195	102	180	106	193
April	180	225	212	249	183	219	153	233
May	246	259	272	279	248	257	209	267
June	252	299	311	326	251	291	222	306
July	234	338	290	364	272	333	253	349
Aug.	250	308	299	337	254	304	223	314
Sept.	143	220	167	243	197	220	160	231
Oct.	89	167	142	189	174	165	156	179
Nov.	71	108	102	125	139	115	137	118
Dec.	89	84	98	94	108	87	100	89
Total	1,848	2,388	2,214	2,622	2,106	2,368	1,885	2,492

TEMPERATURE, HUMIDITY, AND WIND

The maximum and minimum temperatures shown for the stations in Mexico are from daily maximum and minimum thermometer observations. The mean monthly temperatures are averages of these daily maximum and minimum temperatures.

The mean monthly temperatures and relative humidities shown for stations in the United States were integrated from continuous records of hygrothermographs, housed in louvered shelters, with the sensing elements of the instruments 0.41 meters above the ground and 2.74 meters southwest of either a 0.61 or 1.22-meter diameter evaporation pan. The maximum and minimum temperatures shown below are the extreme temperatures for the month as recorded on the charts except for Falcon Dam and Amistad Dam, where the readings are based on daily maximum and minimum thermometer observations.

Monthly mean wind velocities are based on the total kilometers of wind movement indicated by a standard 3-cup anemometer installed and operated according to specifications for a Class A National Weather Service evaporation station.

Temperature - In Degrees Celsius

In The United States											
Amistad Dam, Texas				Falcon Dam, Texas							
Month	Mean 2003	Average 1963-2003	Max. 2003	Min. 2003	Mean 2003	Average 1950-2003	Max. 2003	Min. 2003	Mean 2003	Average 1950-2003	Max. 2003
Jan.	12	11	30	-2	12	13	31	1			
Feb.	13	13	27	-2	14	16	33	1			
Mar.	19	18	35	4	19	20	35	3			
April	24	22	36	8	23	24	39	9			
May	29	26	41	17	28	27	42	21			
June	30	29	38	19	29	29	41	21			
July	29	30	37	20	28	30	40	23			
Aug.	31	30	43	21	29	30	41	23			
Sept.	27	27	37	16	24	27	39	18			
Oct.	23	22	32	8	22	23	34	8			
Nov.	18	16	29	2	18	18	31	1			
Dec.	14	12	23	1	14	14	28	-2			
Yearly	22	21	43	-2	22	23	42	-2			

In Mexico												
Ojinaga, Chihuahua				La Amistad, Coahuila				Cd. Acuna, Coahuila				
Month	Mean 2003	Average 1954-2003	Max. 2003	Min. 2003	Mean 2003	Average 1977-2003	Max. 2003	Min. 2003	Mean 2003	Average 1951-2003	Max. 2003	Min. 2003
Jan.	11	10	27	-4	10	11	28	-2	10	10	30	-3
Feb.	13	13	29	-3	12	13	25	-4	12	12	26	-4
Mar.	20	17	35	4	18	17	33	4	19	17	36	4
April	28	22	37	14	22	22	34	7	23	22	38	3
May	32	26	45	15	28	26	40	16	29	26	42	17
June	32	30	46	20	29	29	39	19	30	29	41	20
July	31	30	43	21	28	30	37	19	29	30	40	20
Aug.	31	29	45	20	30	31	43	21	31	30	44	21
Sept.	28	27	39	18	25	27	35	15	26	27	37	15
Oct.	21	21	36	2	21	22	30	7	22	21	34	6
Nov.	18	15	32	-1	16	16	27	0	16	15	28	-1
Dec.	10	11	24	-7	12	12	24	-1	12	11	24	-4
Yearly	23	21	46	-7	21	21	43	-4	22	21	44	-4

In Mexico												
Jimenez, Coahuila				Villa Hidalgo, Coahuila				Nuevo Laredo, Tamaulipas				
Month	Mean 2003	Average 1951-2003	Max. 2003	Min. 2003	Mean 2003	Average 1951-2003	Max. 2003	Min. 2003	Mean 2003	Average 1964-2003	Max. 2003	Min. 2003
Jan.	10	12	29	-4	11	12	30	-3	13	13	30	0
Feb.	12	14	29	-3	14	14	31	0	15	16	32	1
Mar.	18	18	36	-3	19	19	35	0	20	20	34	2
April	24	22	39	2	25	24	39	3	25	24	37	6
May	30	26	44	19	31	27	44	21	30	28	41	22
June	30	29	43	19	32	30	44	20	31	30	40	22
July	29	30	44	19	31	31	44	23	31	31	40	23
Aug.	31	30	45	21	32	31	45	21	32	31	42	22
Sept.	27	27	39	15	28	27	39	15	28	28	37	16
Oct.	22	22	34	4	23	22	36	8	24	24	34	9
Nov.	17	16	30	-4	19	17	36	1	20	18	31	2
Dec.	12	12	26	-8	14	13	27	-3	15	14	29	2
Yearly	22	22	45	-8	23	22	45	-3	24	23	42	0

TEMPERATURE, HUMIDITY, AND WIND

Temperature - In Degrees Celsius

Month	In Mexico											
	Nueva Cd. Guerrero, Tamaulipas				Cd. Mier, Tamaulipas				El Retamal, Tamaulipas			
	Mean 2003	Average 1958-2003	Max. 2003	Min. 2003	Mean 2003	Average 1955-2003	Max. 2003	Min. 2003	Mean 2003	Average 1951-2003	Max. 2003	Min. 2003
Jan.	13	14	30	1	12	14	29	1	15	16	31	1
Feb.	16	16	33	0	15	16	31	0	17	17	32	1
Mar.	20	20	35	5	19	21	35	7	22	21	37	7
April	24	24	36	8	24	25	38	7	25	25	40	8
May	30	28	42	18	30	28	42	18	31	27	39	23
June	30	30	41	20	30	30	41	20	32	29	40	23
July	31	31	41	20	31	31	41	20	31	30	39	24
Aug.	31	31	42	21	31	31	43	21	32	30	45	23
Sept.	28	28	40	16	28	29	40	16	29	29	39	18
Oct.	24	24	34	8	24	24	34	8	25	25	38	10
Nov.	21	19	32	6	20	19	31	6	23	21	37	2
Dec.	16	15	29	2	17	15	29	1	18	17	32	1
Yearly	24	23	42	0	23	24	43	0	25	24	45	1

Mean Wind Speed - Kilometers Per Hour

Month	In the United States					
	Martin Ranch, Texas		Amistad Dam, Texas		Falcon Dam, Texas	
	2003	Average 1956-2003	2003	Average 1963-2003	2003	Average 1950-2003
Jan.	6.5	5.9	5.0	4.6	3.6	5.1
Feb.	8.0	7.1	5.8	5.3	5.3	6.0
Mar.	10.0	9.1	7.1	6.2	4.4	6.7
April		9.6	8.4	6.5	5.9	7.5
May		10.4	7.6	6.4	6.3	7.8
June	10.9	11.1	7.1	6.6	5.7	7.9
July	11.3	10.5	6.6	6.3	6.2	8.2
Aug.	9.9	9.6	5.8	5.6	5.6	7.3
Sept.	9.2	7.8	5.1	5.0	2.9	5.4
Oct.	7.6	7.5	5.6	4.8	2.8	4.8
Nov.	8.6	6.3	6.1	4.5	3.5	5.1
Dec.	8.1	5.6	6.4	4.5	3.2	4.8
Yearly		8.4	6.4	5.5	4.6	6.4

Mean Relative Humidity - Percent

Month	In the United States			
	Amistad Dam, Texas		Falcon Dam, Texas	
	2003	Average 1963-2003	2003	Average 1950-2003
Jan.	63	60	73	68
Feb.	68	58	76	66
Mar.	58	54	71	64
April	59	56	70	64
May	68	63	69	67
June	75	63	67	66
July	78	59	70	62
Aug.	72	59	67	63
Sept.	80	64	79	67
Oct.	77	64	78	67
Nov.	78	63	79	68
Dec.	62	61	68	69
Yearly	70	60	72	66

DRAINAGE BASIN AND IRRIGATED AREAS
Along the Rio Grande and Tributaries - 2003

The total area within the outer rim of the Rio Grande basin is about 868,945 square kilometers, but it contains large areas, especially along its southwestern boundary, that contribute no surface runoff to the Rio Grande. Such noncontributing areas constitute about 47 percent of the total area, leaving 456,701 square kilometers of productive watershed which is listed in the tabulation below.

The irrigated areas shown below are listed in accordance with the location of their diversions points and are all within the Rio Grande Basin, except in the lower Rio Grande Valley where large portions of irrigated lands in both countries lie outside the basin boundary line.

On the United States side, only the areas irrigated in 2003 are shown, except that in some reaches the figures shown represent acreages which were subject to irrigation in 2003 but for which data on the portion actually irrigated is not known. On the Mexican side, part of the data may have been gathered prior to 2001. The irrigated area data tabulated are the best data that could be obtained.

DESIGNATION OF AREAS AND GAGING STATIONS	Drainage Basin Square Kilometers			Irrigated Areas - Hectares		
	United States	Mexico	Total	United States	Mexico	Total
Above Elephant Butte Dam	67,141	0	67,141			
Elephant Butte Dam to Caballo Dam	3,354	0	3,354	0	0	0
Above Caballo Dam	70,495	0	70,495	0	0	0
Caballo Dam to American Dam	5,317	0	5,317	32,997	0	32,997
Above American Dam	75,812	0	75,812	32,997	0	32,997
American Dam to Acala Station (Discontinued)	1,740	1,409	3,149	27,927	10,523	38,450
Above Acala Gaging Station (Discontinued)	77,552	1,409	78,961	60,924	10,523	71,447
Acala Station to Fort Quitman Station	1,717	2,056	3,773	3,158	0	3,158
Above Fort Quitman Gaging Station	79,269	3,465	82,734	64,082	10,523	74,605
Fort Quitman Station to Above Presidio Station	4,263	3,652	7,915	1,684	71	1,755
Above Presidio Station above Rio Conchos	83,532	7,117	90,649	65,766	10,594	76,360
Rio San Pedro above Francisco I. Madero Dam	0	10,778	10,778	0	0	0
Rio Conchos above Boquilla Dam	0	10,282	10,282	0	0	0
Boquilla Dam to Luis L. Leon Dam	0	38,490	38,490	0	35,434	35,434
Luis L. Leon Dam to mouth of river	0	8,837	8,837	0	4,158	4,158
Rio Conchos - Total	0	68,387	68,387	0	39,592	39,592
Alamito Creek above Gaging Station	3,895	0	3,895	0	0	0
Presidio Station Above Rio Conchos to Presidio Station below Rio Conchos - excluding above tributaries	881	235	1,116	413	0	413
Presidio Station above Rio Conchos to Presidio Station below Rio Conchos - Total	4,776	68,622	73,398	413	39,592	40,005
Above Presidio Station below Rio Conchos	88,308	75,739	164,047	66,179	50,186	116,365
Terlingua Creek above Gaging Station	2,771	0	2,771	0	0	0
Presidio Station below Rio Conchos to Johnson Ranch Station - excluding Terlingua Creek	2,831	5,848	8,679	273	0	273
Presidio Station below Rio Conchos to Johnson Ranch Station - Total	5,602	5,848	11,450	273	0	273
Above Johnson Ranch Gaging Station	93,910	81,587	175,497	66,452	50,186	116,638
Johnson Ranch Station to Foster Ranch Station	16,607	17,016	33,623	127	0	127
Above Foster Ranch Gaging Station	110,517	98,603	209,120	66,579	50,186	116,765
Pecos River above Girvin (In the State of Texas)	76,566	0	76,566	2,766	0	2,766
Pecos River, Girvin to Station near Langtry	14,548	0	14,548	0	0	0
Station near Langtry to Station at Mouth (Discontinued)	334	0	334	0	0	0
Pecos River - Total	91,448	0	91,448	2,766	0	2,766
Devils River above Pafford Crossing	10,259	0	10,259	0	0	0
Pafford Crossing to Station at Mouth (Discontinued)	891	0	891	0	0	0
Foster Ranch Station to Amistad Dam excluding above tributaries	1,033	6,164	7,197	0	0	0
Foster Ranch Station to Amistad Dam- Total	103,631	6,164	109,795	2,766	0	2,766
Above Amistad Dam	214,148	104,767	318,915	69,345	50,186	119,531
Amistad Dam to Below Amistad Dam Gaging Station	13	10	23	0	0	0
Above the Below Amistad Dam Gaging Station	214,161	104,777	318,938	69,345	50,186	119,531
Below Amistad Dam Station to Del Rio Station	155	259	414	96	0	96
Above Del Rio Gaging Station	214,316	105,036	319,352	69,441	50,186	119,627
Arroyo Las Vacas above Gaging Station	0	906	906	0	34	34
San Felipe Creek above Gaging Station	119	0	119	871	0	871

DRAINAGE BASIN AND IRRIGATED AREAS
Along the Rio Grande and Tributaries - 2003

DESIGNATION OF AREAS AND GAGING STATIONS	Drainage Basin Square Kilometers			Irrigated Areas - Hectares		
	United States	Mexico	Total	United States	Mexico	Total
Pinto Creek Above Gaging Station	645	0	645	87	0	87
Rio San Diego above Gaging Station	0	2,209	2,209	0	2,854	2,854
Gaging Station to mouth of river	0	16	16	0	0	0
Rio San Diego - Total	0	2,225	2,225	0	2,854	2,854
Del Rio Station to Jimenez Station - excluding above tributaries	1,733	285	2,018	a)	19,495	308
Del Rio Station to Jimenez Station - Total	2,497	3,416	5,913	19,495	3,196	22,691
Above the Jimenez Gaging Station	216,813	108,452	325,265	89,894	53,382	143,276
Rio San Rodrigo - Total	0	2,717	2,717	0	150	150
Jimenez Station to Piedras Negras Station- excluding Rio San Rodrigo	1,375	378	1,753	89	0	89
Jimenez Station to Piedras Negras Station-Total	1,375	3,095	4,470	89	150	239
Above Piedras Negras Gaging Station	218,188	111,547	329,735	89,983	53,532	143,515
Rio Escondido above Gaging Station	0	3,779	3,779	0	0	0
Rio Escondido - Total	0	3,810	3,810	0	0	0
Piedras Negras Station to El Indio Station - excluding Rio Escondido	614	533	1,147	0	339	339
Piedras Negras Station to El Indio Station - Total	614	4,343	4,957	0	339	339
Above El Indio Gaging Station	218,802	115,890	334,692	89,983	53,871	143,854
El Indio Gaging Station to Laredo Gaging Station	3,201	5,481	8,682	3,464	695	4,159
Above Laredo Gaging Station	222,003	121,371	343,374	93,447	54,566	148,013
Rio Salado above Venustiano Carranza Dam	0	41,002	41,002	0	1,829	1,829
Rio Salado-Venustiano Carranza Dam to Las Tortillas Gaging Station	0	18,969	18,969	0	1,550	1,550
Rio Salado-Las Tortillas Gaging Station to River Road Crossing	0	435	435	0	490	490
Rio Salado- Total	0	60,406	60,406	0	3,869	3,869
Laredo Station to Falcon Dam - excluding Rio Salado	5,289	3,437	8,726	b)	5,369	854
Laredo Station to Falcon Dam - Total	5,289	63,843	69,132	5,369	4,723	10,092
Amistad Dam to Falcon Dam - excluding above tributaries	12,380	10,383	22,763	28,513	2,196	30,709
Above Falcon Dam	227,292	185,214	412,506	98,816	59,289	158,105
Rio Alamo above Gaging Station	0	4,339	4,339	0	0	0
Rio San Juan above Marte Gomez Dam	0	33,010	33,010	0	1,289	1,289
Rio San Juan - Marte Gomez Dam to Camargo Gaging Station	0	505	505	0	62,509	62,509
Rio San Juan - Total	0	33,538	33,538	0	63,798	63,798
Falcon Dam to Rio Grande City Station - excluding above tributaries	575	637	1,212	1,537	5,145	6,682
Falcon Dam to Rio Grande City Station - Total	575	38,514	39,089	1,537	68,943	70,480
Above Rio Grande City Gaging Station	227,867	223,728	451,595	100,353	128,232	228,585
Rio Grande City Station to Anzalduas Dam Anzalduas Canal	2,466	2,067	5,829	65,829	148,547	214,376
Above Anzalduas Dam	230,333	225,795	456,128	166,182	276,779	442,961
Anzalduas Dam to Progreso Station(Discontinued)	34	423	457	45,107	862	45,969
Above Progreso Gaging Station	230,367	226,218	456,585	211,289	277,641	488,930
Progreso Station to San Benito Station	18	23	41	123,456	251	123,707
Above San Benito Gaging Station	230,385	226,241	456,626	334,745	277,892	612,637
San Benito Station to Brownsville Station	36	39	75	27,929	142	28,071
Above Brownsville Gaging Station	230,421	226,280	456,701	362,674	278,034	640,708
Brownsville Station to Gulf of Mexico				1,180	0	1,180
Falcon Dam to Gulf of Mexico - excluding Rio Alamo and Rio San Juan				265,038	154,947	419,985
Amistad Dam to Gulf of Mexico excluding above tributaries				293,551	157,143	450,694
Above Gulf of Mexico				363,854	278,034	641,888

a) Includes 15,566 hectares irrigated from the Maverick Canal below Mile 13 gaging station.

b) Includes 45 hectares irrigated from small reservoirs.

WATER BULLETIN NUMBER 73 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

08-4507.00 SUPPLEMENTARY DATA - INTERNATIONAL AMISTAD RESERVOIR
DEDUCED INFLOWS

Considering that a knowledge of the mean daily inflows reaching the International Amistad Reservoir would serve a useful purpose, such data have been deduced for 2003 showing the flows as closely as they can be approximated. These data are based on the daily operation of the International Amistad Reservoir, taking into account: a) record of gage heights at the dam; b) releases; c) filtrations; d) elevation-area-capacity tables based on 1992 survey; and e) rate of evaporation measured at the dam.

Flow contributions from different sources, river channel losses, reservoir evaporation, accuracy of gage-height records, displacement due to wind action on the reservoir, and bank storage and return incident to changes in reservoir level, all tend to cause variations in the deduced determinations; and the inflows shown below should not necessarily be in agreement with the combined flow of the Rio Grande at Foster Ranch, Pecos River near Langtry, and Devils River at Pafford Crossing.

In spite of the deficiencies noted above and others that may occur, the data shown below represent a reasonable approximation of the flows entering the International Amistad Reservoir.

MEAN DAILY DISCHARGE IN CUBIC METERS PER SECOND 2003 --- ANNUAL AND PERIOD SUMMARY												
Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	37.7	31.7	33.1	23.0	35.2	41.9	57.9	38.1	69.9	31.4	40.9	29.0
2	34.2	34.3	32.2	22.6	38.0	36.1	85.9	59.9	70.1	32.8	43.1	29.2
3	34.5	35.5	29.8	26.2	35.4	38.2	50.9	58.4	89.8	28.7	43.9	29.6
4	35.7	33.2	34.8	28.9	38.8	31.2	58.2	44.1	66.4	28.9	45.1	32.3
5	36.7	33.6	35.0	31.1	37.4	39.1	53.5	41.9	56.0	29.9	45.0	32.4
6	36.7	33.5	35.4	34.0	33.2	38.9	102	40.1	20.8	35.4	45.8	31.8
7	37.0	32.4	33.8	37.7	26.0	40.9	108	37.2	42.2	40.9	44.5	31.1
8	38.2	30.9	33.8	30.5	27.8	48.8	110	33.9	34.5	47.1	41.9	31.4
9	37.8	31.6	33.5	29.3	30.5	40.2	68.4	32.6	64.5	67.9	38.5	33.3
10	36.4	30.7	33.5	27.9	35.0	41.2	116	30.8	38.9	115	38.7	32.5
11	35.1	30.7	32.6	25.3	30.6	58.3	132	29.0	39.2	684	38.3	31.7
12	37.4	30.3	33.0	21.7	31.4	165	39.5	31.3	45.7	856	38.3	31.9
13	37.7	30.4	33.2	27.0	28.9	129	68.6	38.7	43.1	413	34.2	31.0
14	39.2	32.7	33.0	28.8	38.7	44.9	95.7	54.4	57.2	353	34.2	29.3
15	42.4	32.6	32.4	29.1	44.0	91.2	74.8	53.1	65.7	217	36.7	31.9
16	39.5	30.8	32.7	31.3	45.2	84.5	136	48.4	55.3	62.1	38.0	31.6
17	37.8	30.6	34.7	33.5	28.8	51.1	466	34.1	31.1	87.3	40.9	31.6
18	36.0	30.9	32.2	30.5	33.6	38.5	382	31.2	39.2	93.0	36.9	31.7
19	35.8	30.8	28.4	32.6	30.7	35.1	375	27.5	66.3	106	34.8	31.6
20	37.7	30.4	25.7	31.8	38.1	33.3	130	28.0	46.1	81.7	34.9	32.7
21	38.9	32.8	27.8	30.4	40.0	29.8	59.6	26.6	34.1	65.5	34.9	33.6
22	38.6	32.4	28.1	28.2	36.3	42.5	54.8	27.0	45.1	60.2	33.8	33.7
23	36.2	32.0	26.7	34.0	31.6	27.0	54.2	28.4	33.8	54.9	33.8	33.7
24	35.0	32.2	25.9	31.9	31.0	28.9	43.2	30.6	31.8	52.1	27.2	33.7
25	34.9	45.5	27.0	35.8	37.1	33.3	36.1	37.0	57.5	54.0	28.7	31.2
26	35.3	40.3	26.6	30.4	47.4	45.9	30.4	40.2	77.4	50.0	29.3	32.9
27	34.5	36.3	27.8	30.2	75.9	113	31.7	31.4	99.7	43.7	30.5	34.8
28	34.5	34.5	25.6	27.8	96.8	104	32.3	30.2	51.5	44.0	29.1	34.8
29	35.3	24.7	29.6	73.5	124	40.5	27.4	32.1	41.7	26.9	34.3	34.3
30	34.3	24.2	33.0	42.4	46.8	58.9	64.8	38.6	38.9	25.9	33.0	31.1
31	33.2	23.5		46.4		45.0	113		41.2			
Sum	923.6	894.1	1,722.6	1,245.7	3,197.1	1,249.3	3,957.3	994.4				
	1,134.2	940.7										
Current Year 2003												
Period 1977-2003												
Extreme Gage Meters			Extreme-Cubic Meters per Second			Volume-Thousand Cubic Meters						
Month	High	Low	@ High Day	@ Low Day	Average	Total	Average	Maximum	Minimum			
Jan.			15	42.4	31	33.2	36.6	97,995	147,284	368,798	93,044	
Feb.			25	45.5	12	30.3	33.0	79,799	142,876	432,864	79,713	
Mar.			6	35.4	31	23.5	30.3	81,276	157,705	322,164	81,276	
April			25	37.7	12	21.7	29.8	77,250	166,226	437,055	77,250	
May			28	96.8	7	26.0	40.2	107,628	213,397	472,211	104,422	
June			12	165	23	27.0	57.4	148,833	237,394	562,118	105,589	
July			17	466	26	30.4	103	276,229	229,693	496,282	102,747	
Aug.			31	113	21	26.6	40.3	107,940	295,494	1,037,318	107,940	
Sept.			27	99.7	17	20.8	51.5	133,367	311,057	1,624,752	79,376	
Oct.			12	856	3	28.7	128	341,911	327,783	1,172,715	82,132	
Nov.			6	45.8	30	25.9	36.5	94,582	164,834	560,631	88,007	
Dec.			27	34.8	1	29.0	32.1	85,916	131,766	321,211	85,916	
Yearly			856		20.8	51.8	1,632,726	2,525,509	5,003,493	1,386,893		

